California Statewide Groundwater Elevation Monitoring Program

Public Workshops
January 2014

Association of California Water Agencies
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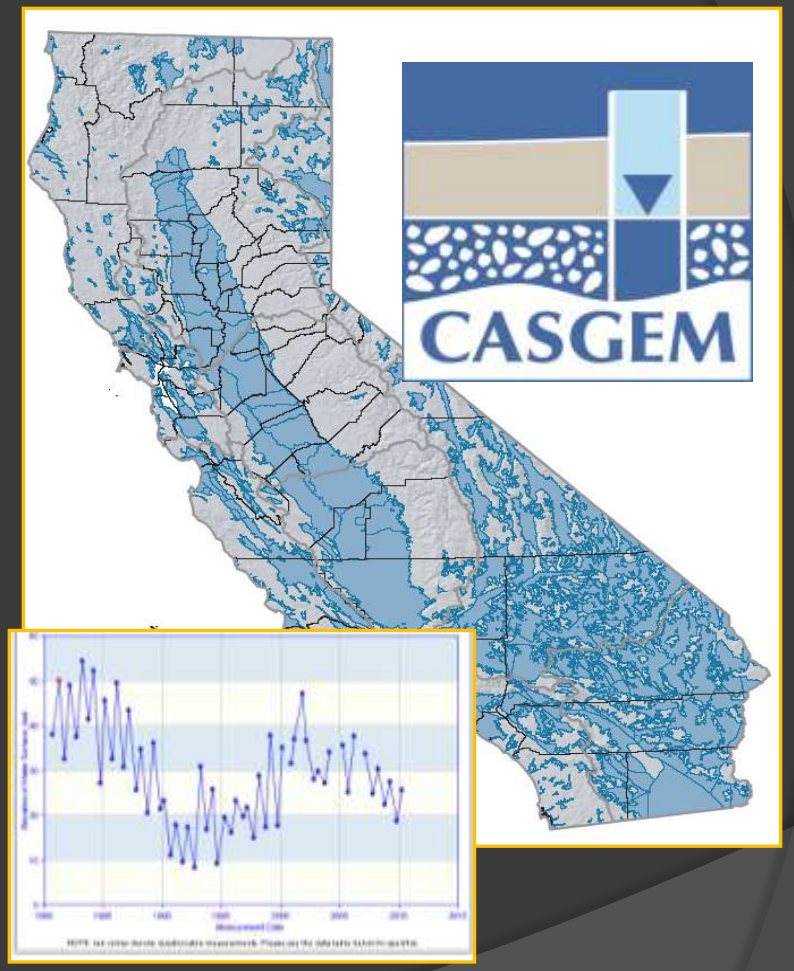
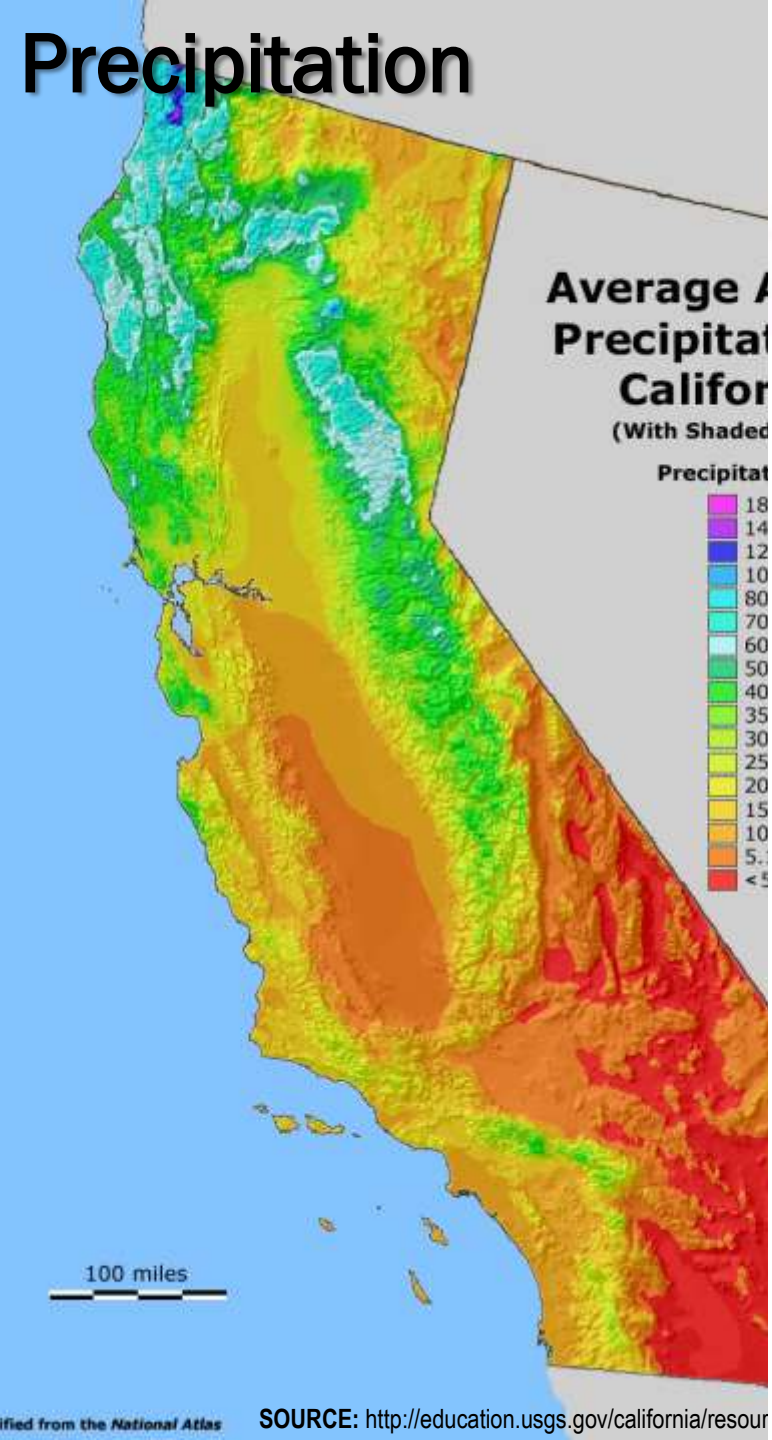
DEPARTMENT OF WATER RESOURCES • STATE OF CALIFORNIA •

OUTLINE

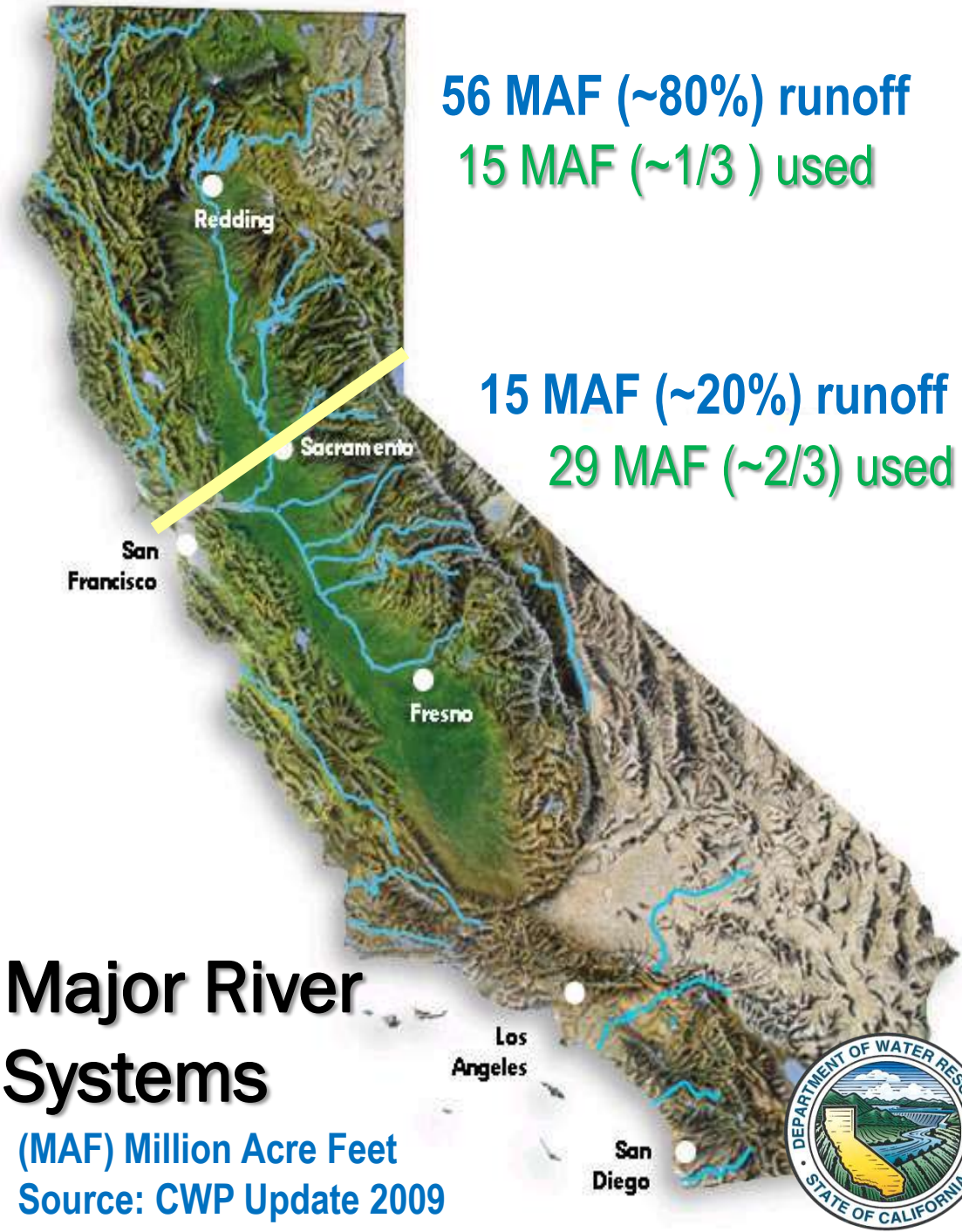
- CASGEM Overview
  - Water 101
  - Background
  - Current Statistics
  - Data
  - Analysis
- Basin Prioritization
- Next Steps



Precipitation



SOURCE: http://education.usgs.gov/california/resour



56 MAF (~80%) runoff
15 MAF (~1/3) used

15 MAF (~20%) runoff
29 MAF (~2/3) used

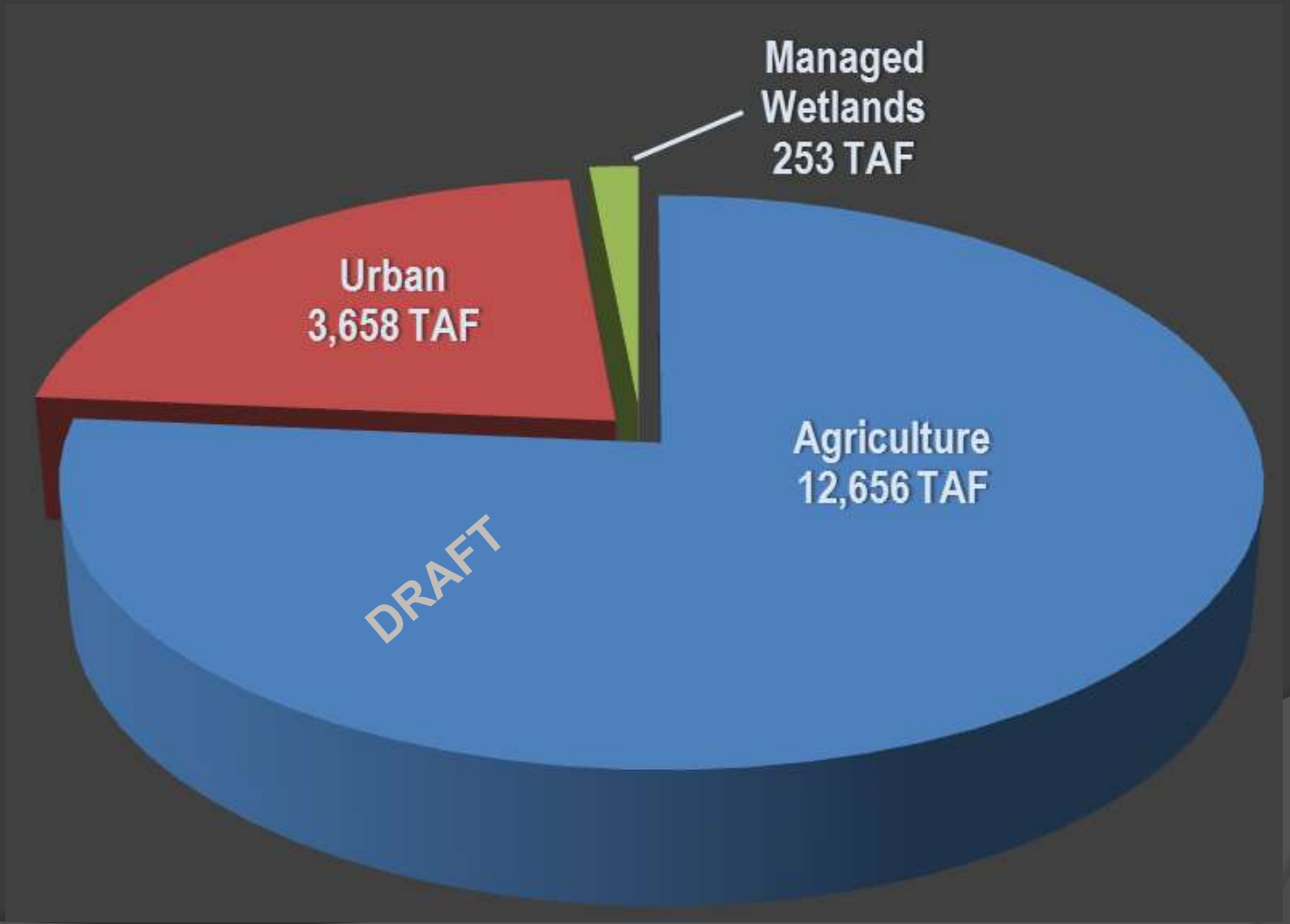
Major River Systems

(MAF) Million Acre Feet
Source: CWP Update 2009

DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

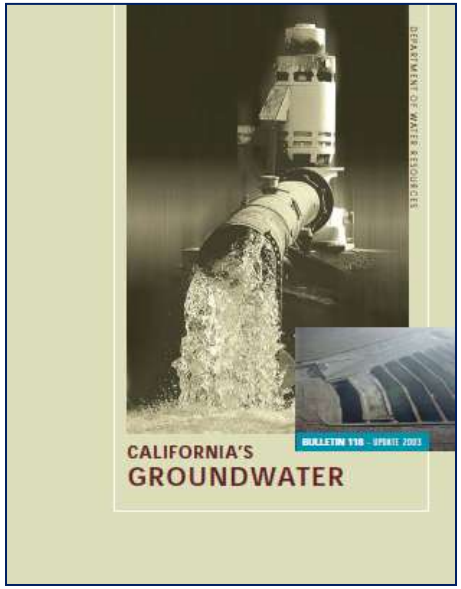
Statewide Groundwater Use

2005-2010 Average Annual: 16,567 Thousand Acre Feet (TAF)



Source: California Water Plan Update 2013

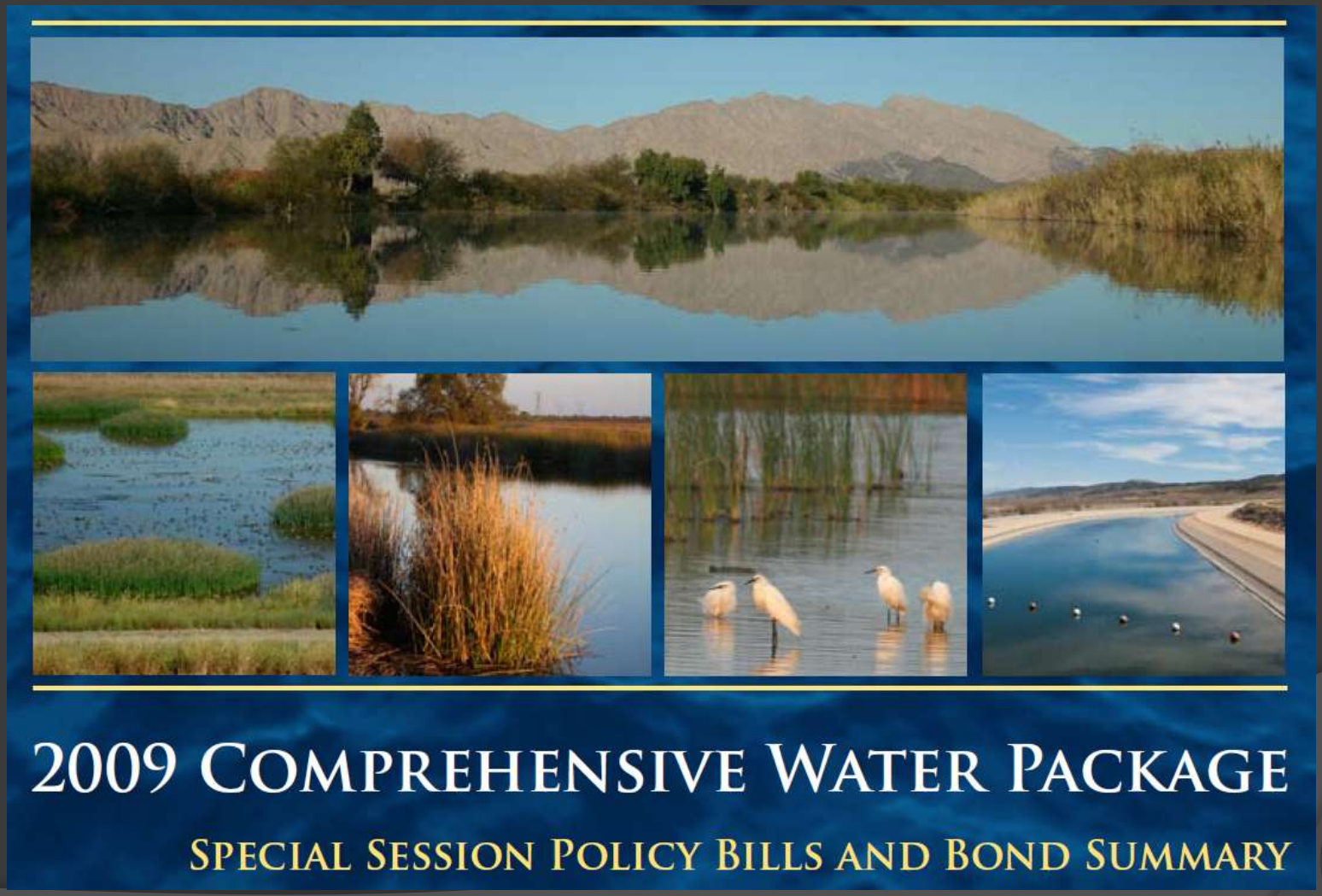
California's Groundwater Basins



- 515 alluvial basins/subbasins
- ~ 30 to 45 % of state's water supply
- Basins, precipitation, population, and demands are not evenly distributed

Source: DWR's Bulletin 118, update 2003

Background


2009 Comprehensive Water Package
Special Session Policy Bills and Bond Summary

Groundwater Monitoring Bill

Senate Bill x7-6, CWC 10920 et seq.

(effective Jan. 2010)

- **Established a voluntary Statewide groundwater monitoring program**
  - **"Monitoring Entities" will regularly and systematically monitor and report groundwater elevations to demonstrate seasonal and long-term trends**
  - **Groundwater data is "readily and widely available" to the public**

Program Overview

- **CASGEM Program**
  - Collaboration between DWR and local agencies
  - Collection of groundwater elevation data by agencies
  - Data are readily and widely available to the public
  - Basin prioritization and evaluation by DWR
  - DWR prepares report for the Governor and Legislature

www.water.ca.gov/groundwater/casgem

Amendment to CWC

Assembly Bill 1152 (effective Jan. 2012)

- **A local agency monitoring groundwater without GWMP can be monitoring entity**
  - Required adoption of a GWMP by Jan. 2014

- **Alternate monitoring – In basins where physical monitoring is impractical**
  - Groundwater levels unaffected by land use
  - Unusable groundwater
  - Inaccessible terrain

Program Accomplishments

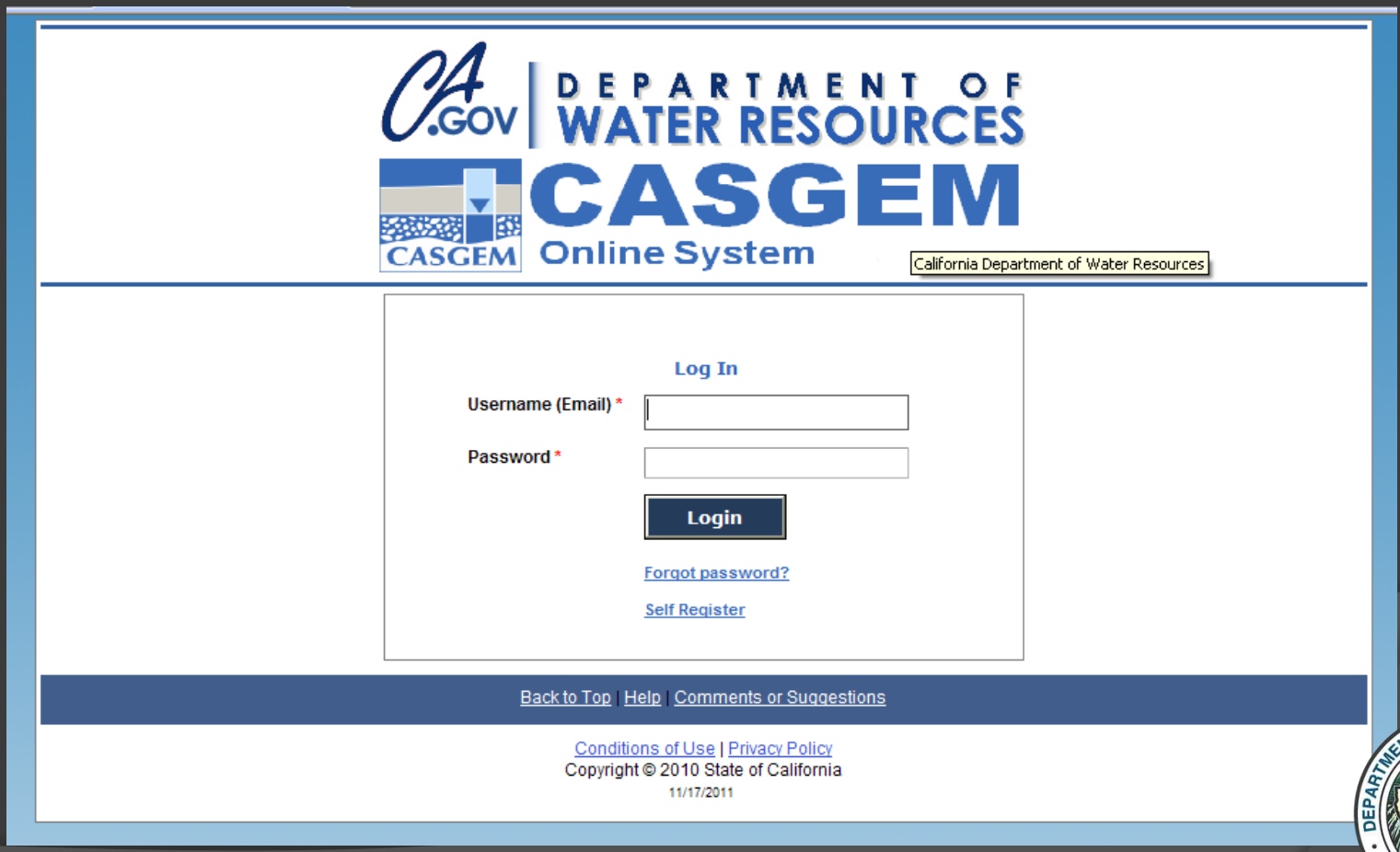
- ☑ Conducted outreach with local agencies
- ☑ Developed and implemented the online system
- ☑ Notifications from prospective monitoring entities began January 2011
- ☑ Groundwater elevation data submittal began by January 2012
- ☑ DWR completed report for the Governor and Legislature in January 2012
- ☑ Monitoring entities designated for basins/subbasins
- ☑ Addressed alternate monitoring where appropriate
- ☑ Groundwater elevation data continues to be uploaded

Current Program Statistics
(as of Dec. 17, 2013)

- 473 Notifications of intent to monitor
  - 395 basins/subbasins (or portion)
  - 124 unique agencies
- 200 Designated Notifications
  - 152 basins/subbasins (or portion)
  - 71 Designated Monitoring Entities
- 3,700+ CASGEM wells (since 2012)
- 100k records (includes historic data)
- 273 Notifications in various degrees of progress

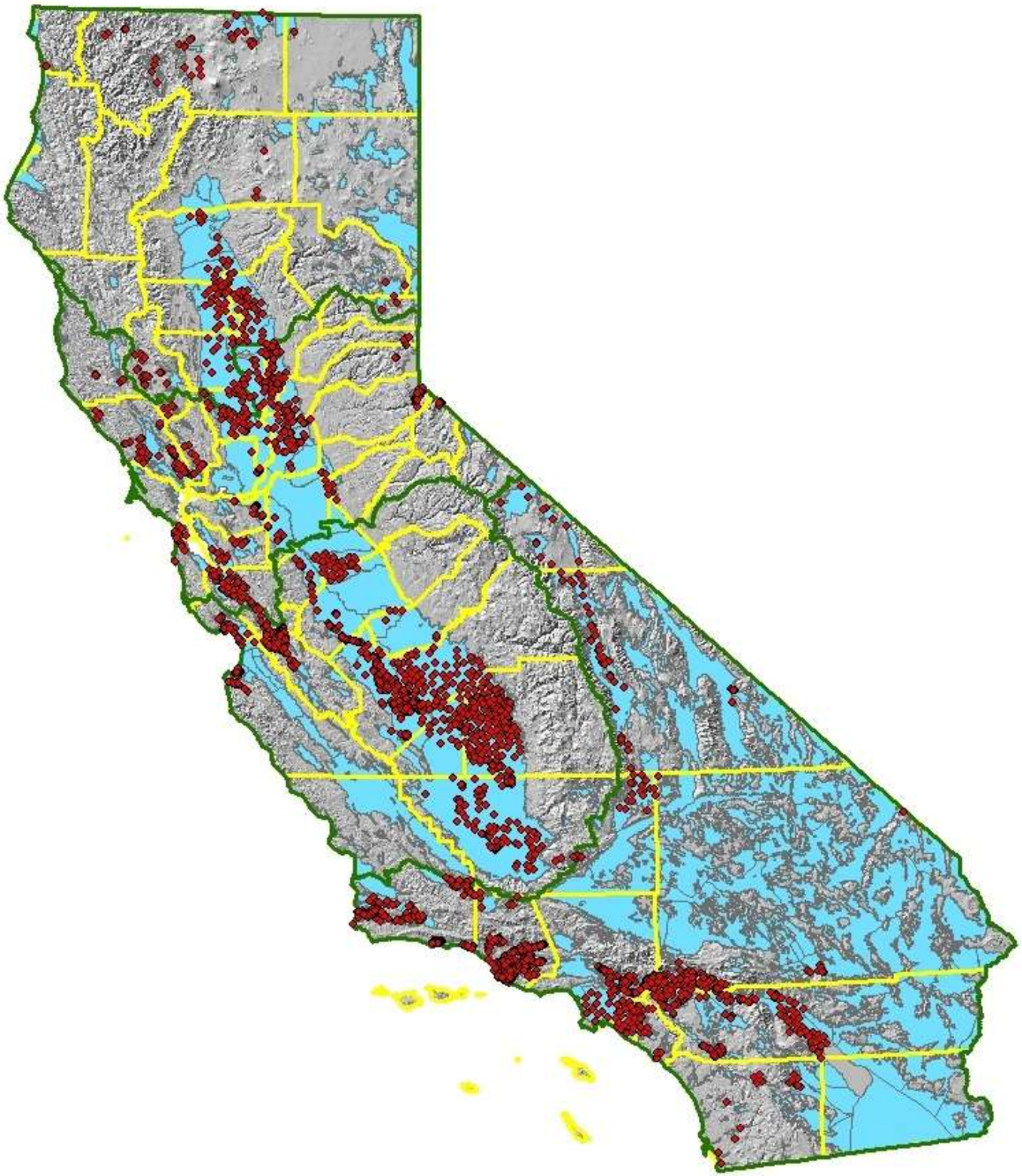
Online System

http://www.water.ca.gov/groundwater/casgem



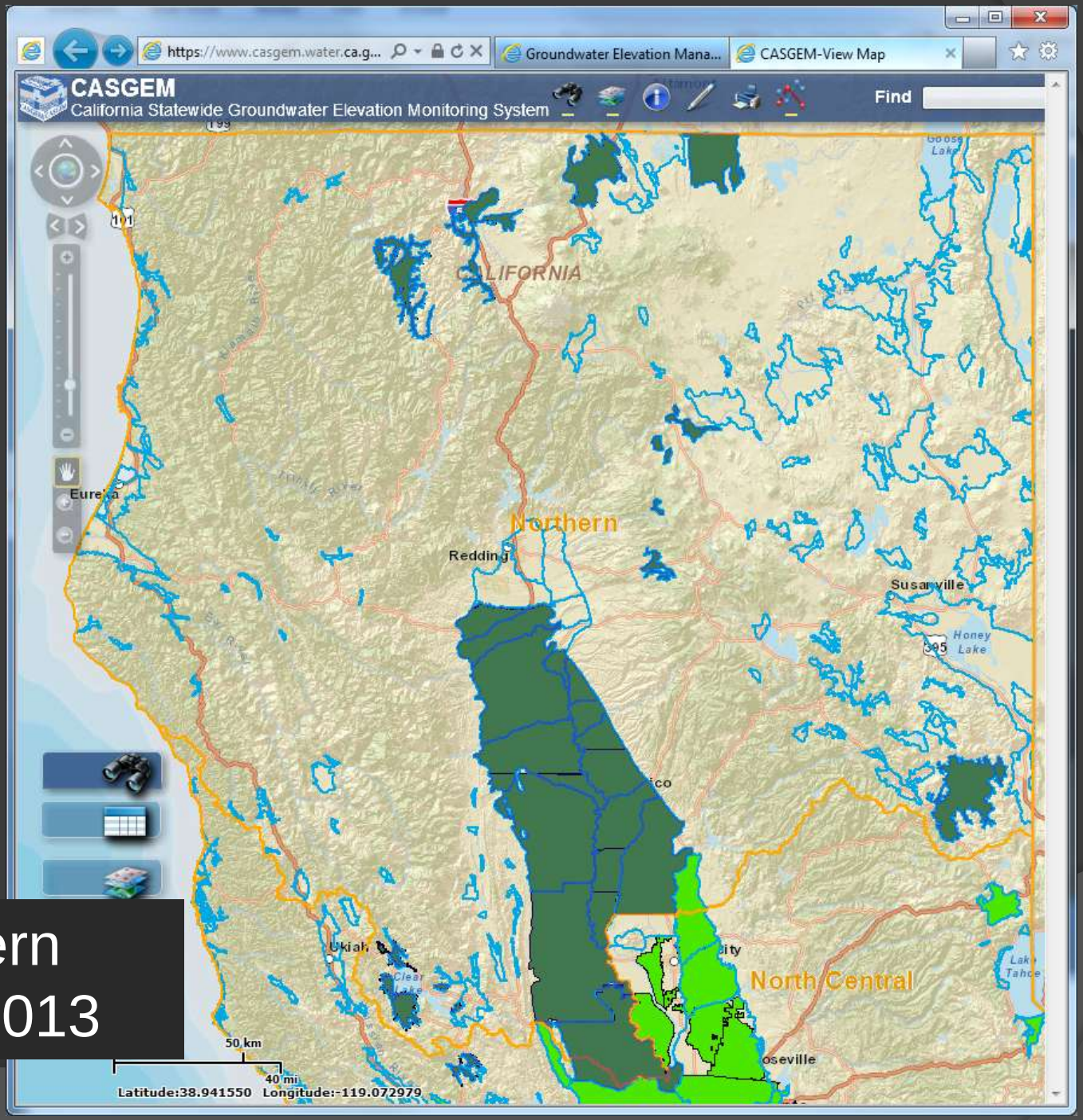
Areas Monitored by a Designated Monitoring Entity

as of December 2013

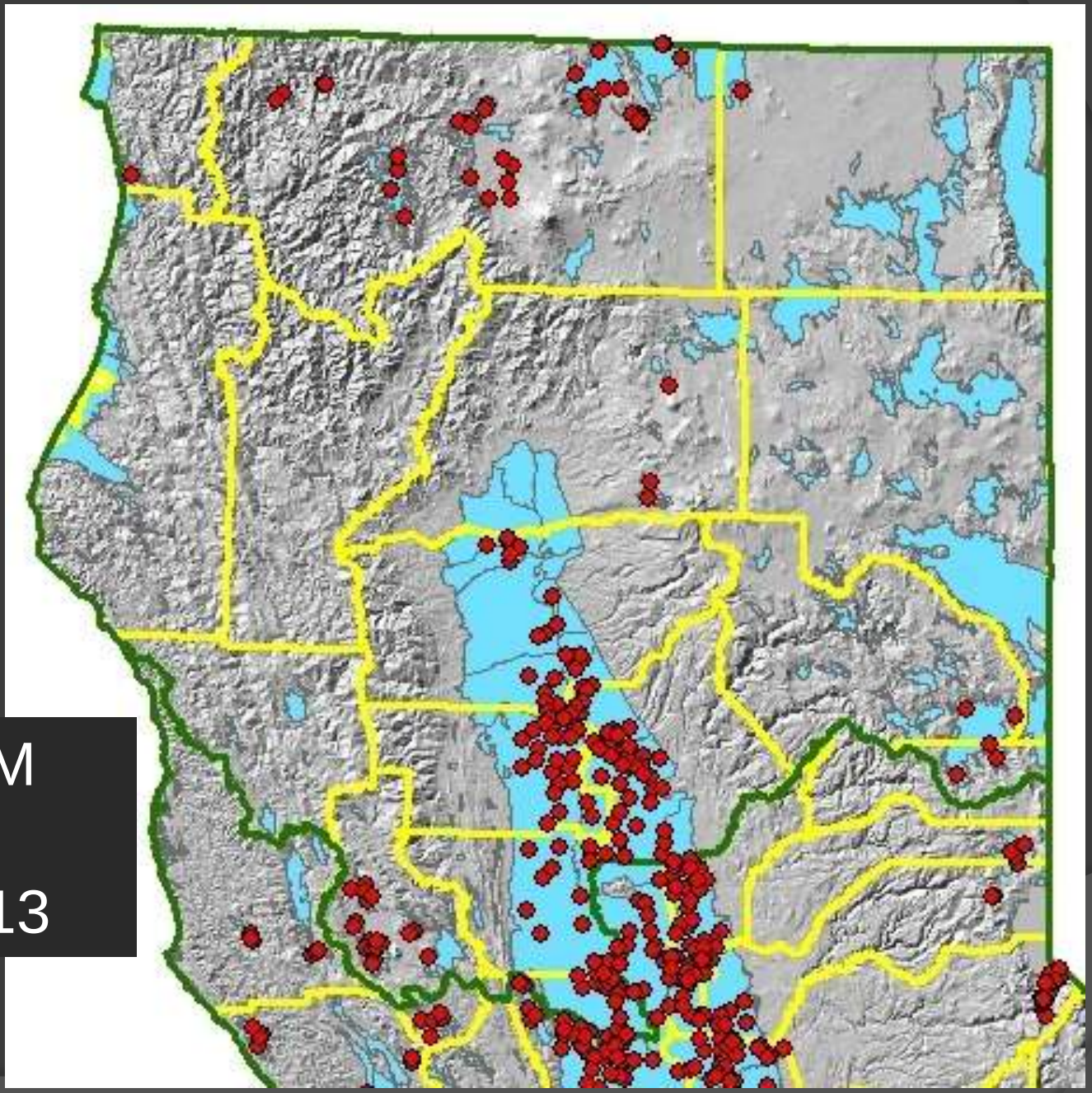


CASGEM wells

as of December 2013



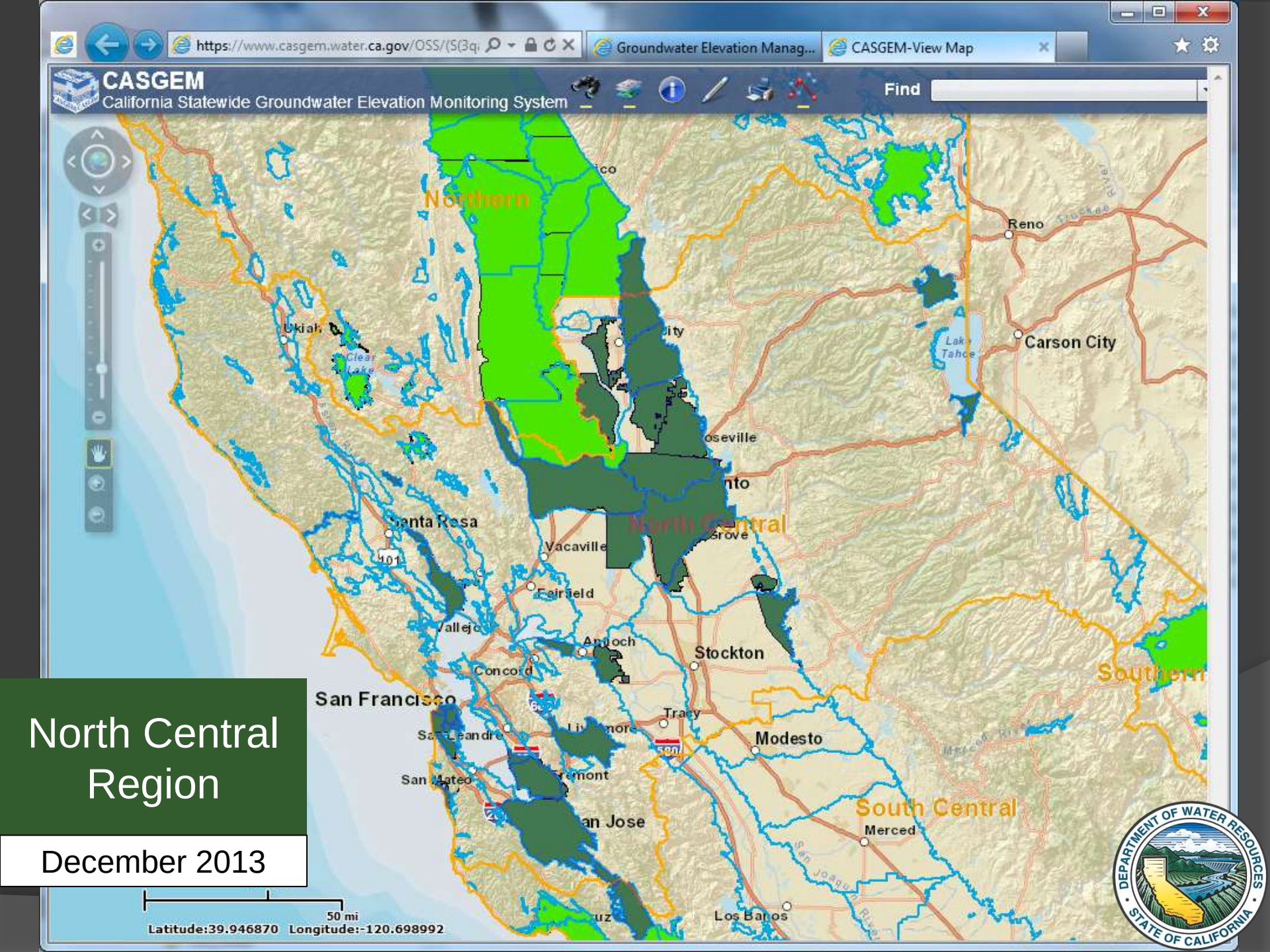
Northern
Dec. 2013



CASGEM
wells
Dec. 2013

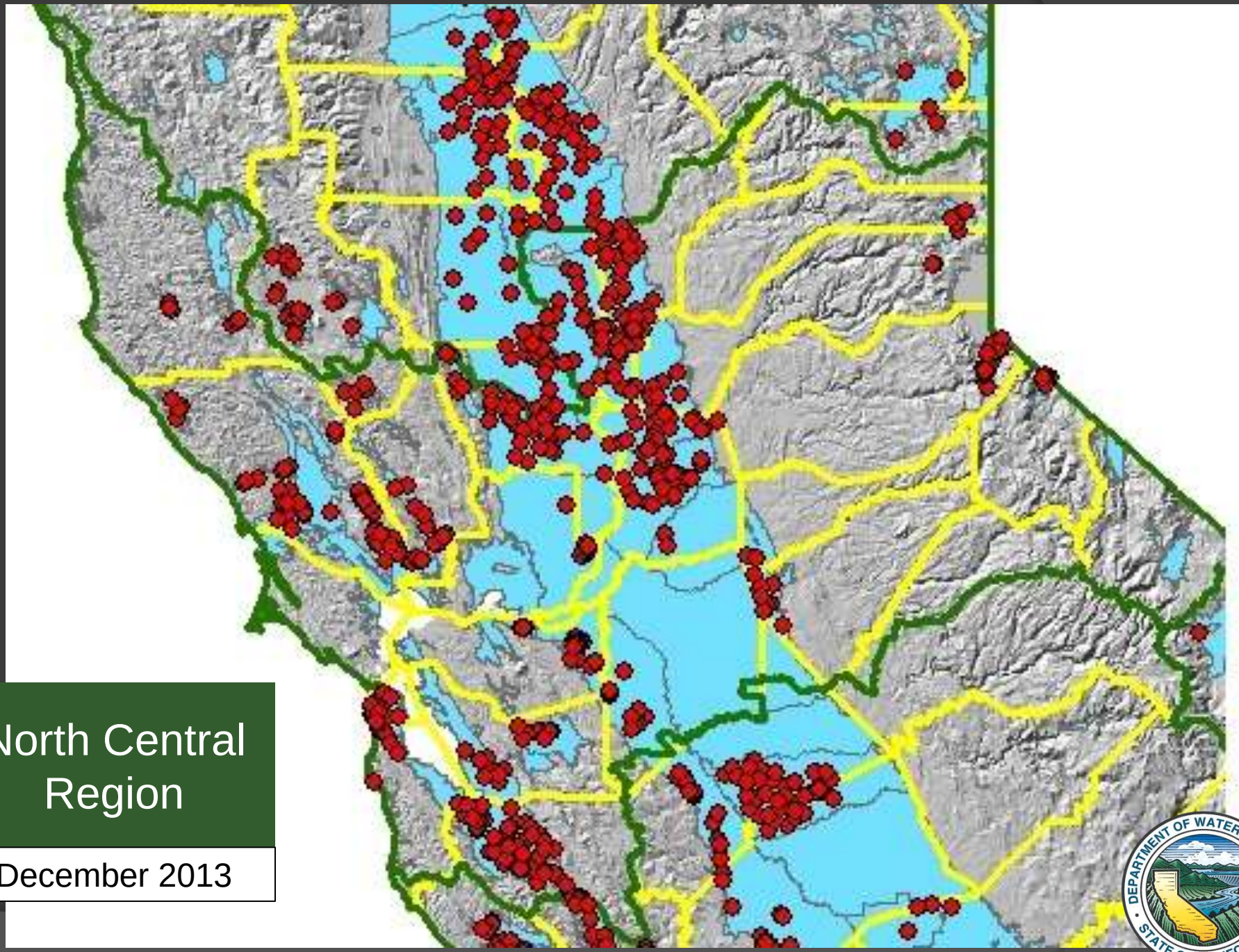
Northern Region Statistics

- 134 basins/subbasins
- 148 Notifications submitted from 16 different agencies
- 39 basins/subbasins designated by 10 unique monitoring entities
- 30 basins fully monitored
- 109 Notifications in progress



North Central Region

December 2013

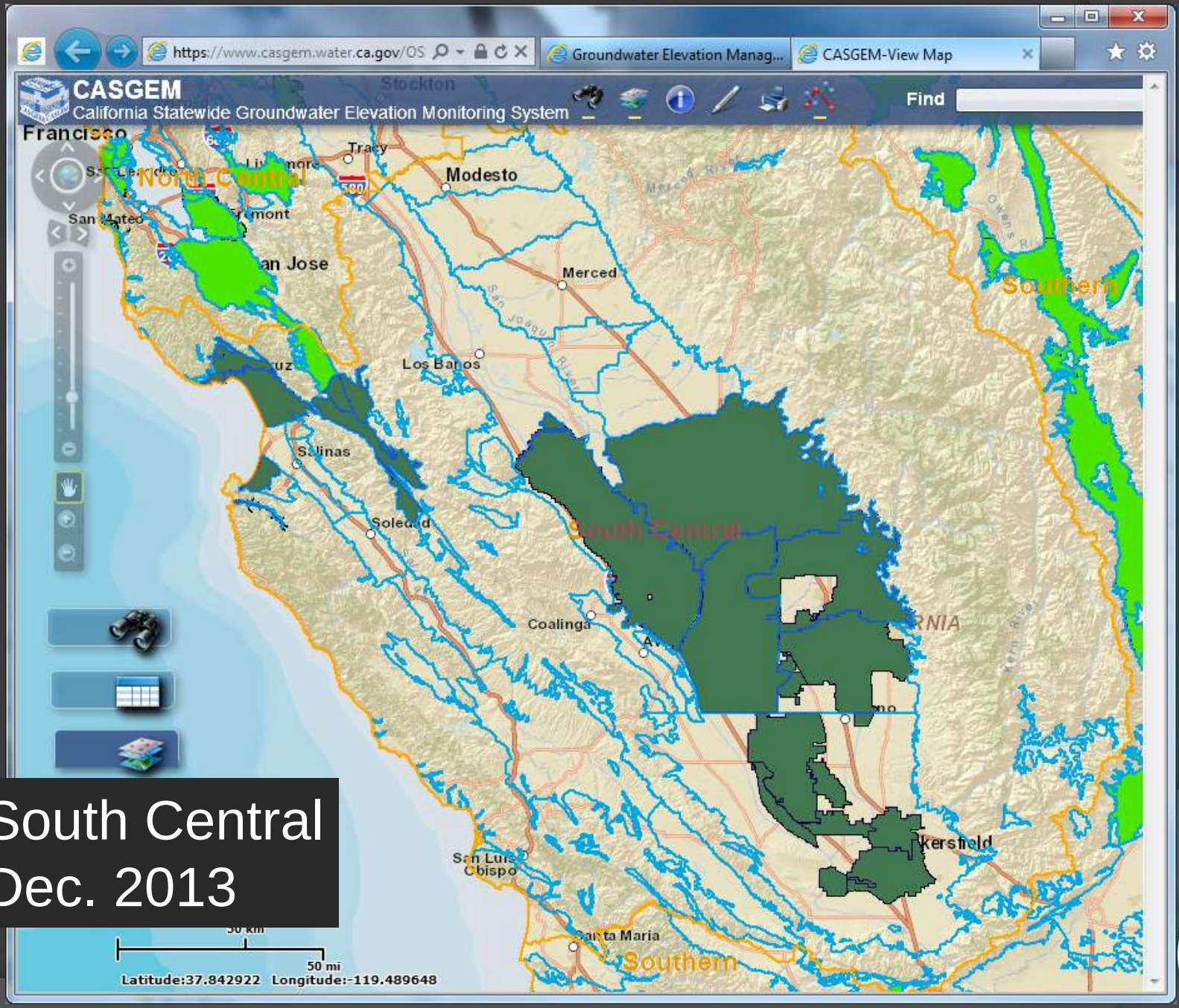


North Central Region

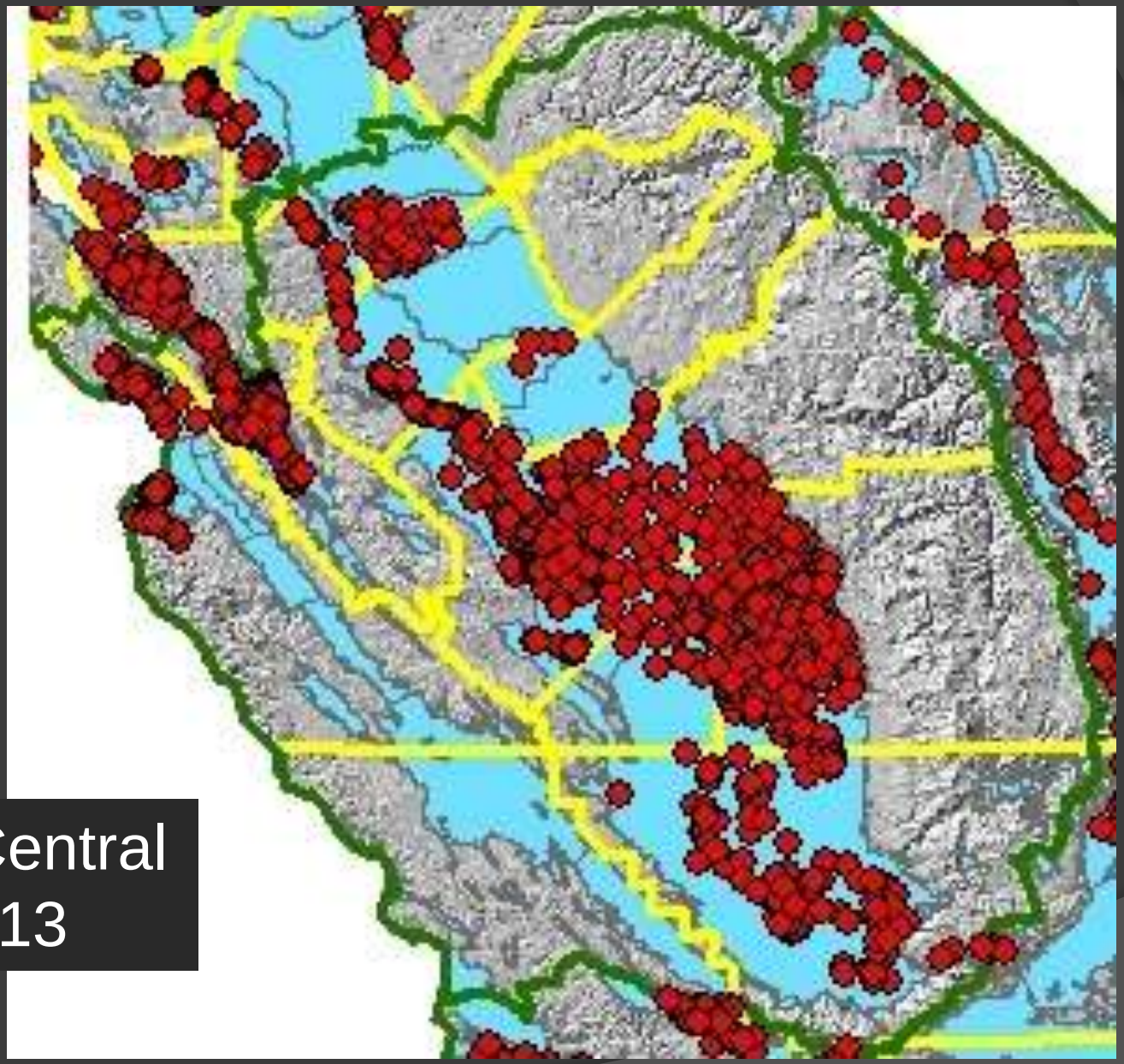
December 2013

North Central Region Statistics

- 82 basins/subbasins
- 81 Notifications submitted from 38 agencies
- 25 unique agencies Designated
- 38 basins/subbasins with Designated Monitoring Entity
- 20 basins fully monitored
- 43 Notifications in various degrees of progress



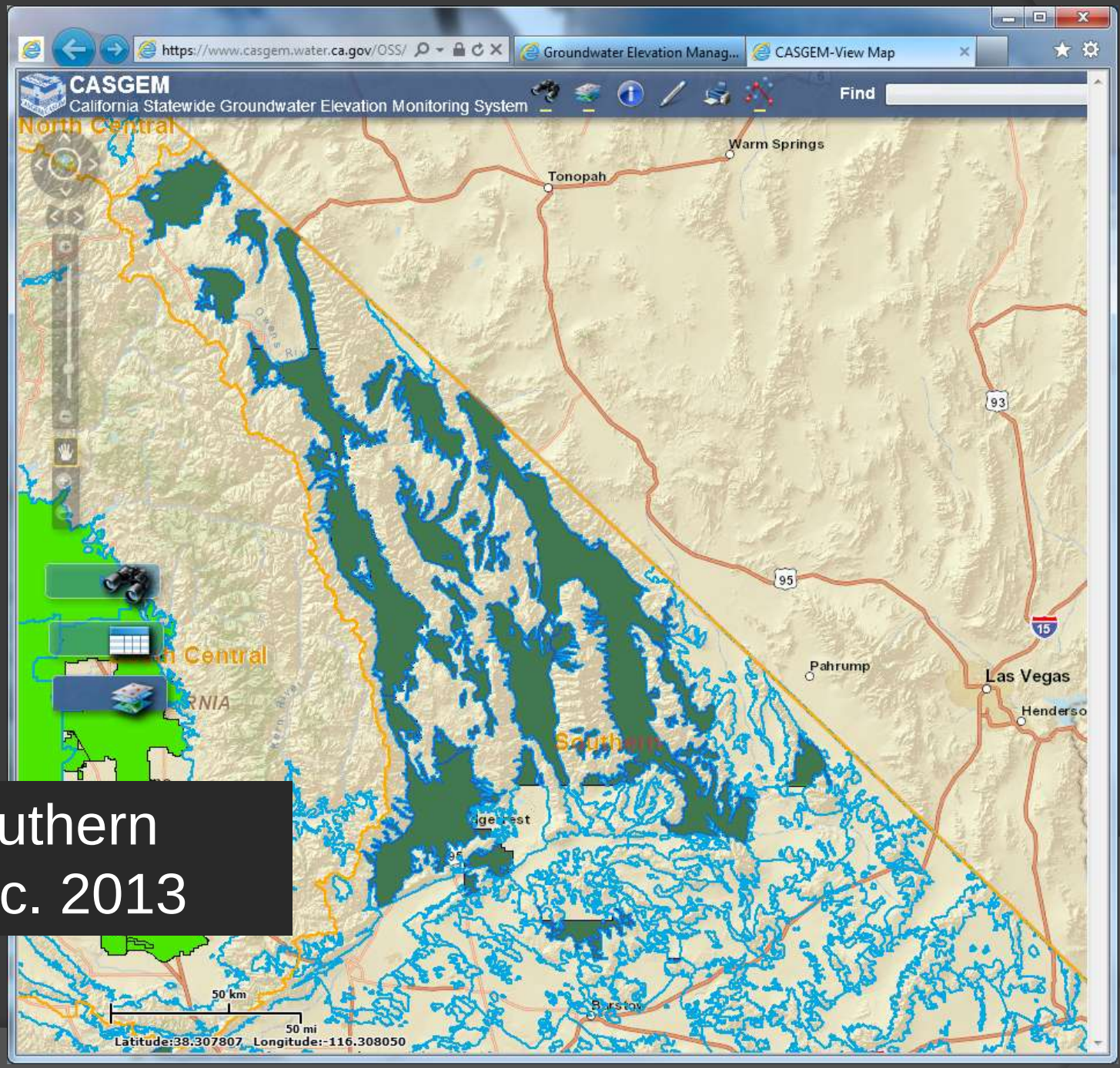
South Central
Dec. 2013



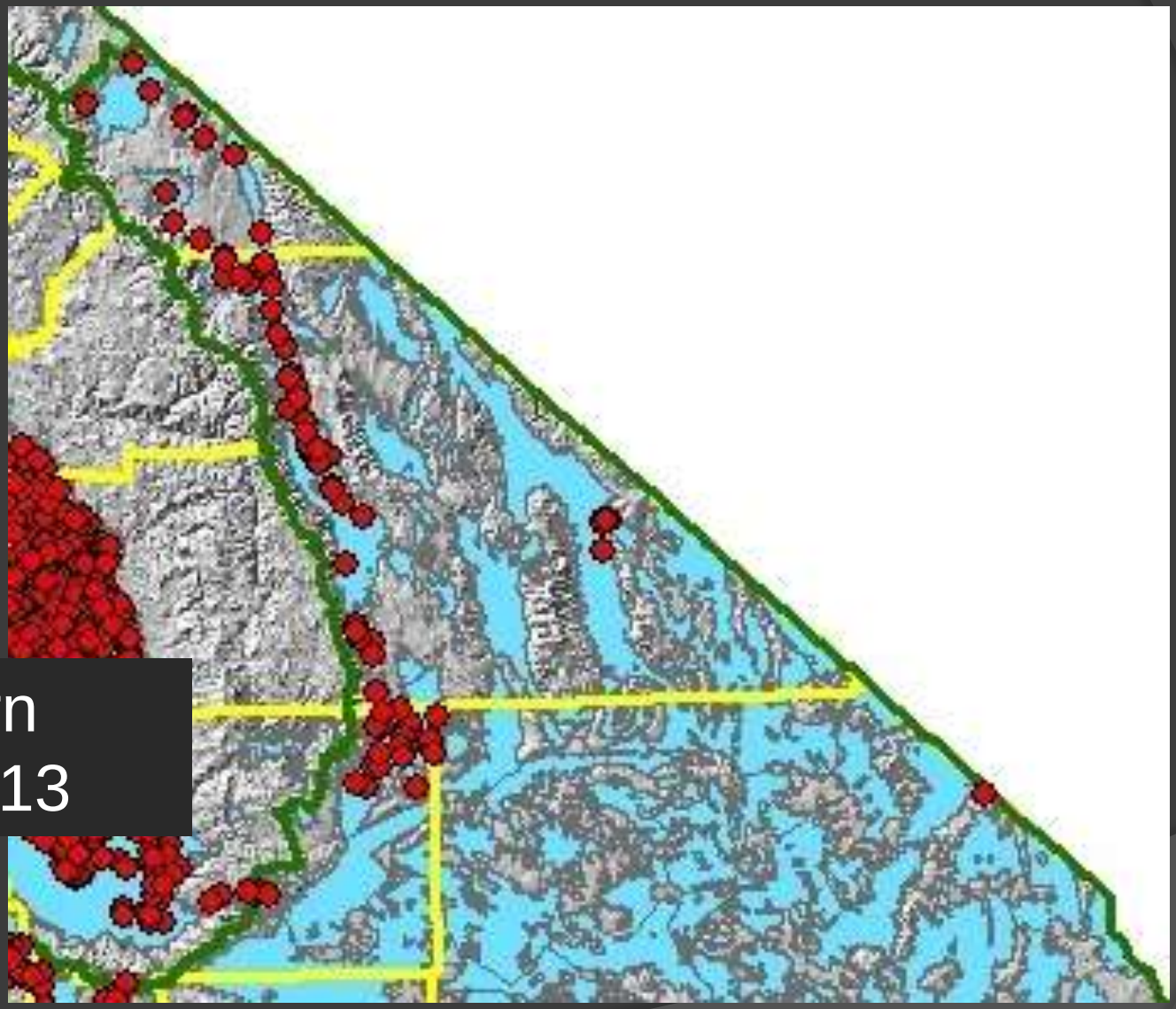
South Central
Dec. 2013

South Central Region Statistics

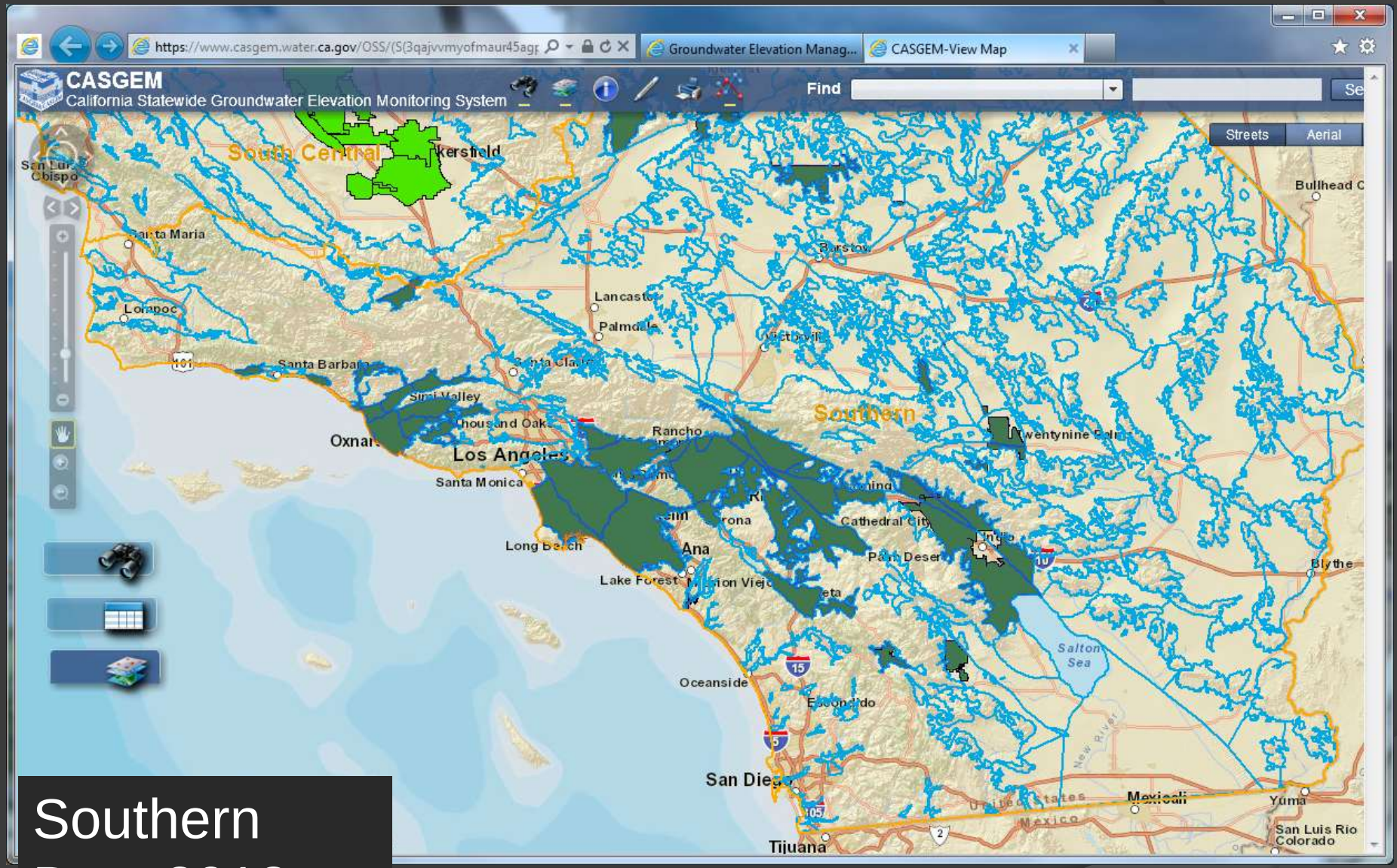
- 76 basins/subbasins
- 91 Notifications submitted from 31 agencies
- 28 basins/subbasins with Designated Monitoring Entity
- 11 unique agencies
- 13 basins fully monitored
- 63 Notifications in progress



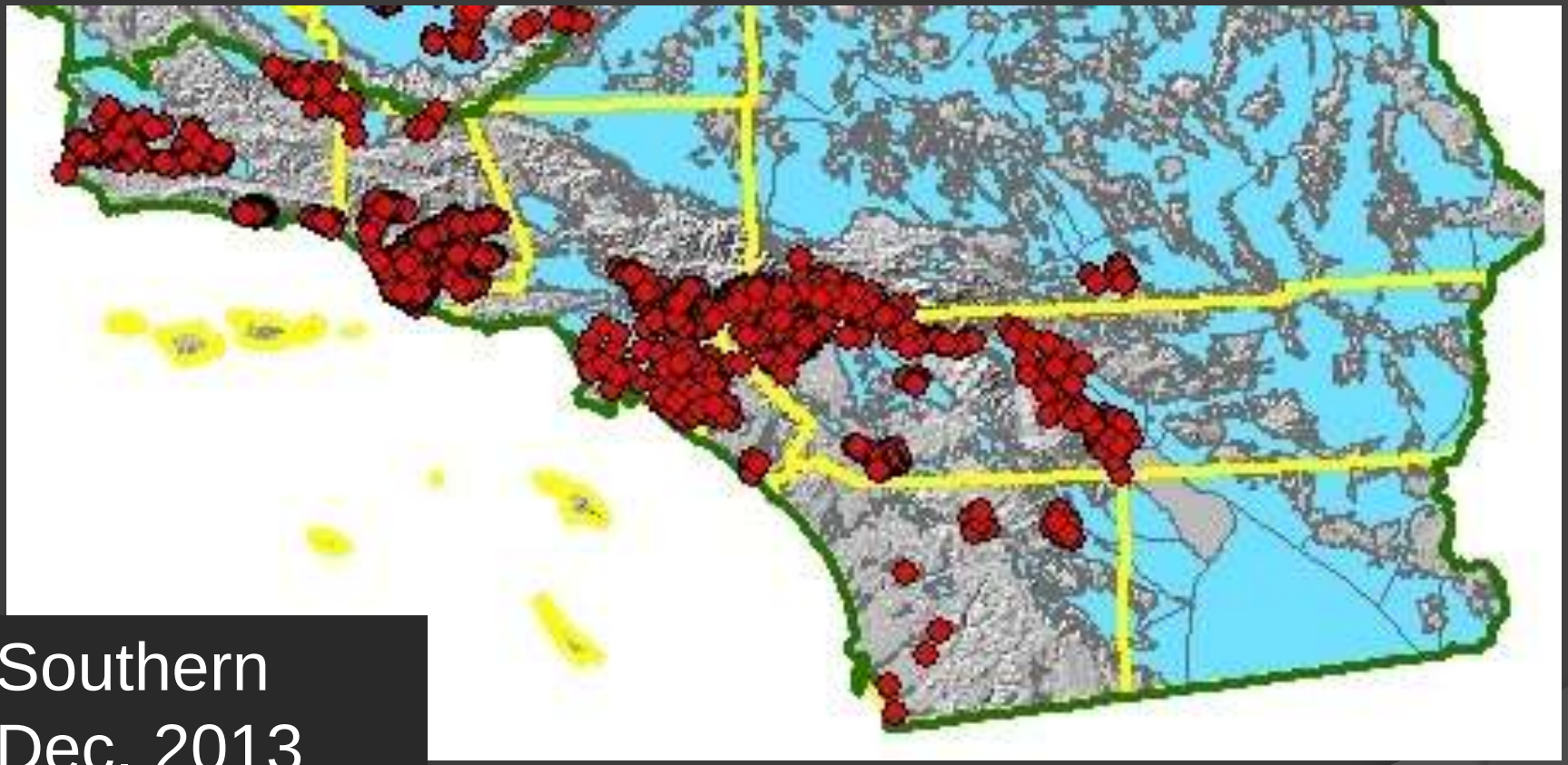
Southern
Dec. 2013



Southern
Dec. 2013



Southern
Dec. 2013



Southern
Dec. 2013

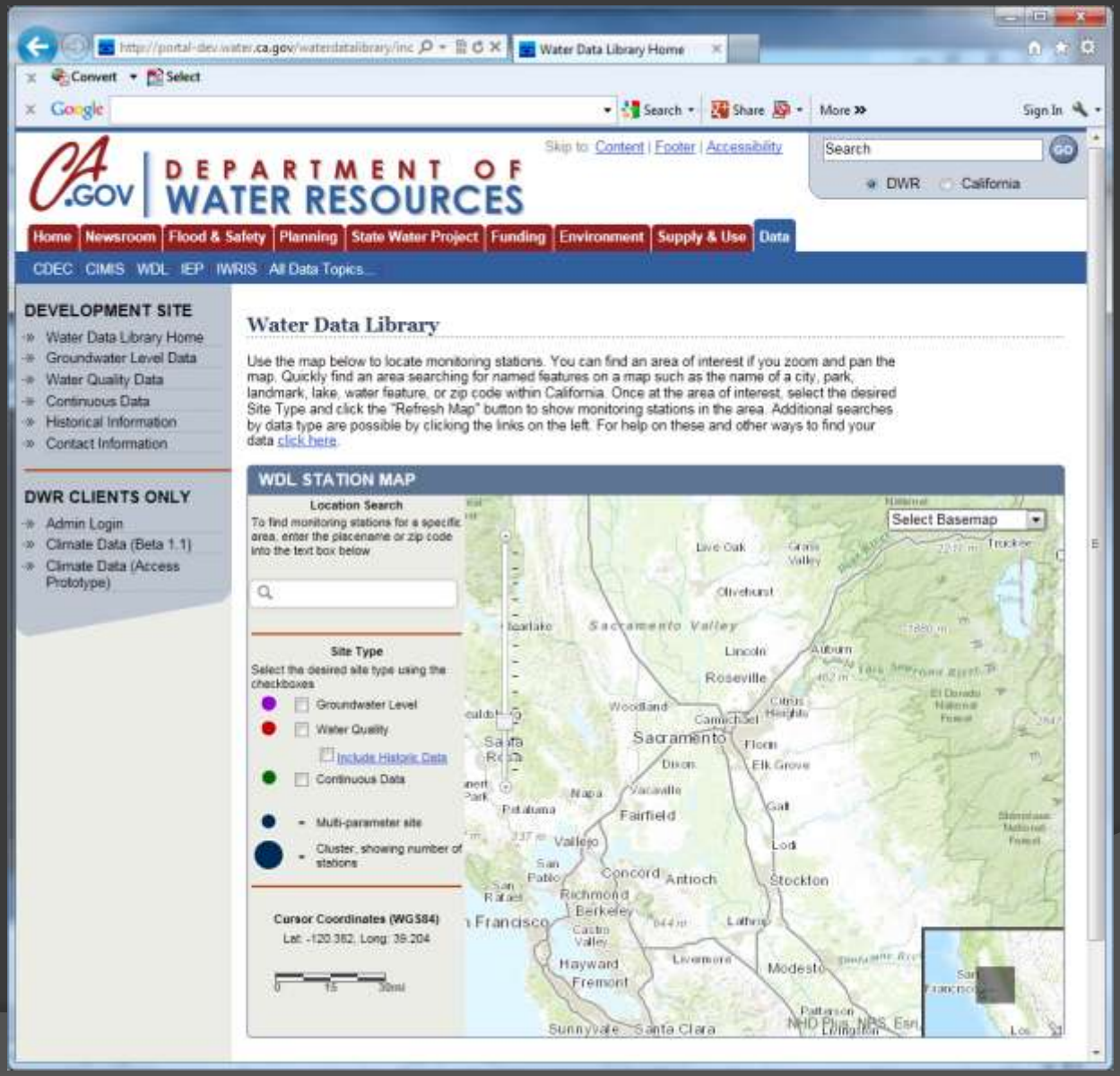
Southern Region Statistics

- 223 basins/subbasins
- 152 Notifications submitted from 43 Agencies
- 95 basins/subbasins with Designated Monitoring Entity
- 27 unique agencies
- 67 basins fully monitored
- 57 Notifications in progress

Implementation Challenges

- Funding
- Tight schedule
- B118 groundwater basins
- Voluntary participation
- Well availability/suitability
- Integrating WDL+CASGEM

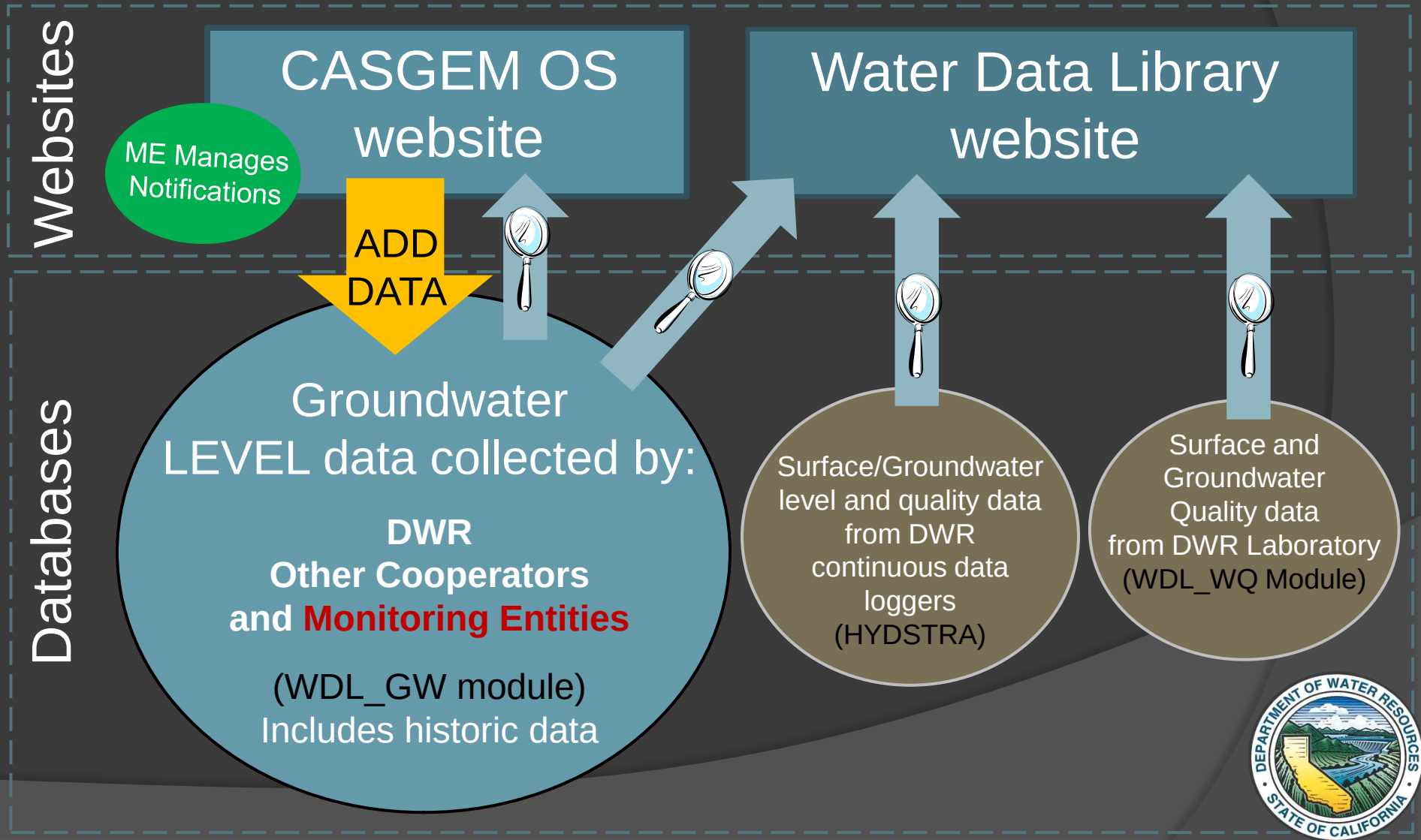
Water Data Library website



CASGEM and Water Data Library

- CASGEM data is stored in an updated version of Water Data Library - Groundwater Elevation Module (WDL_GW).
- CASGEM data is a subset of the Water Data Library. CASGEM data and WDL_GW data are in the same database.
- Historical (pre-CASGEM) data (1.5M records) are being migrated into the updated (WDL_GW) database. About 80% complete.

CASGEM and Water Data Library

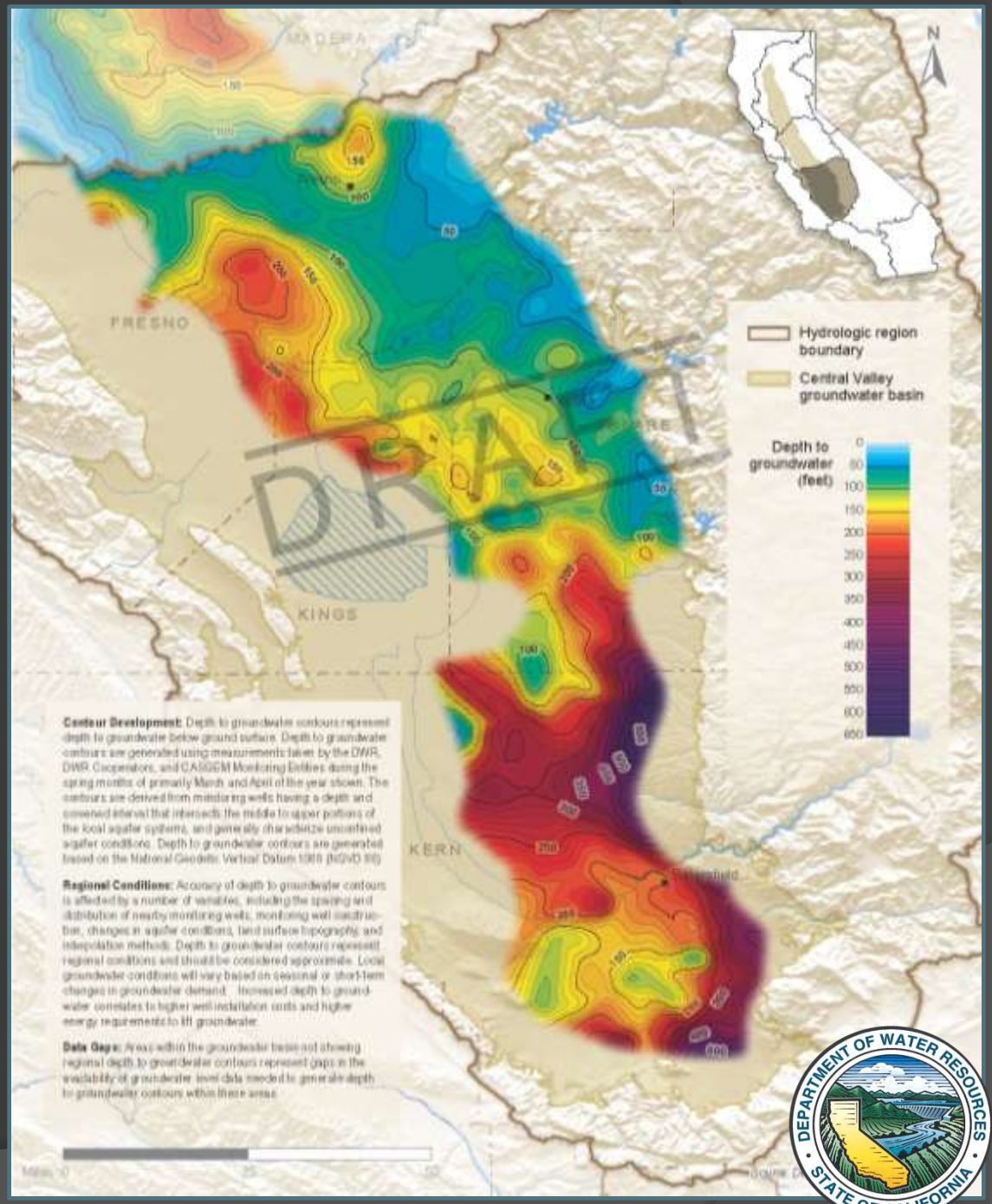


Data Collection and Analysis

- Why is groundwater data important?
  - Evaluate groundwater levels and trends
  - Identify areas of depression/recharge
  - Baseline data is critical for evaluating groundwater basins
  - Assess impacts – land subsidence, overdraft, drought
- How does CASGEM help?
  - Consolidates groundwater elevation data for public access
  - Allows seasonal and year to year comparisons
  - Allows for collection and sharing of data in areas not previously monitored
  - CASGEM data complements existing dataset in WDL
- CASGEM wells include construction information
  - Allows for determination of aquifer zones
  - Allows evaluation of similar data (confined v. unconfined)
  - Allows for higher quality data analysis

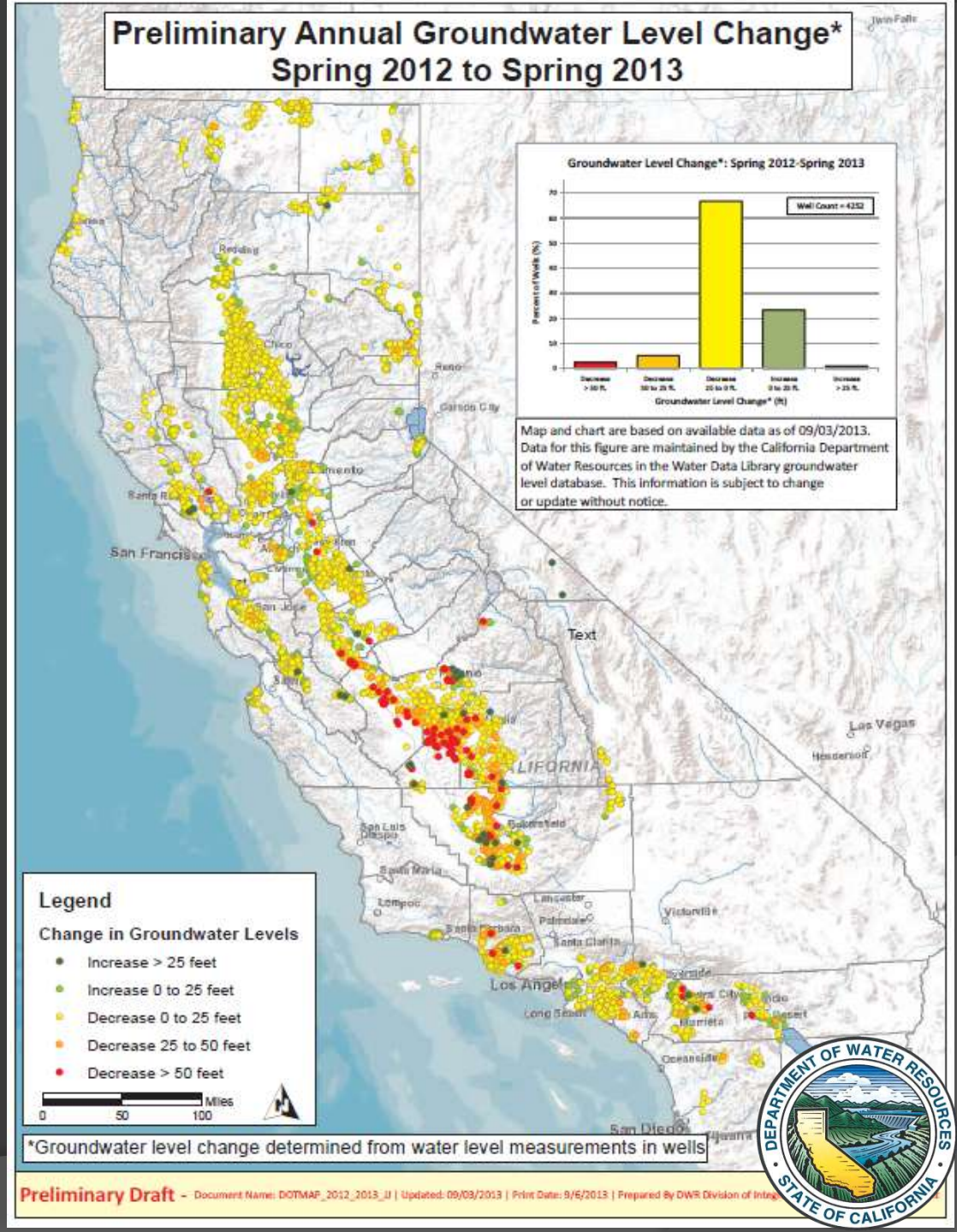
Tulare Lake Hydrologic Region

Spring 2010
Depth-to-Groundwater

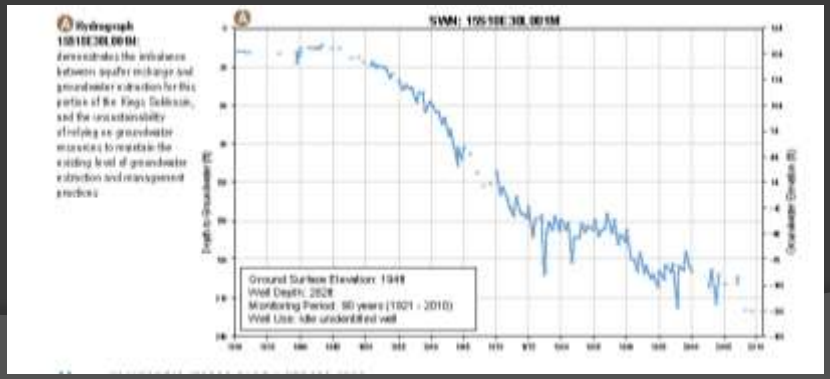


Statewide Groundwater Level Change

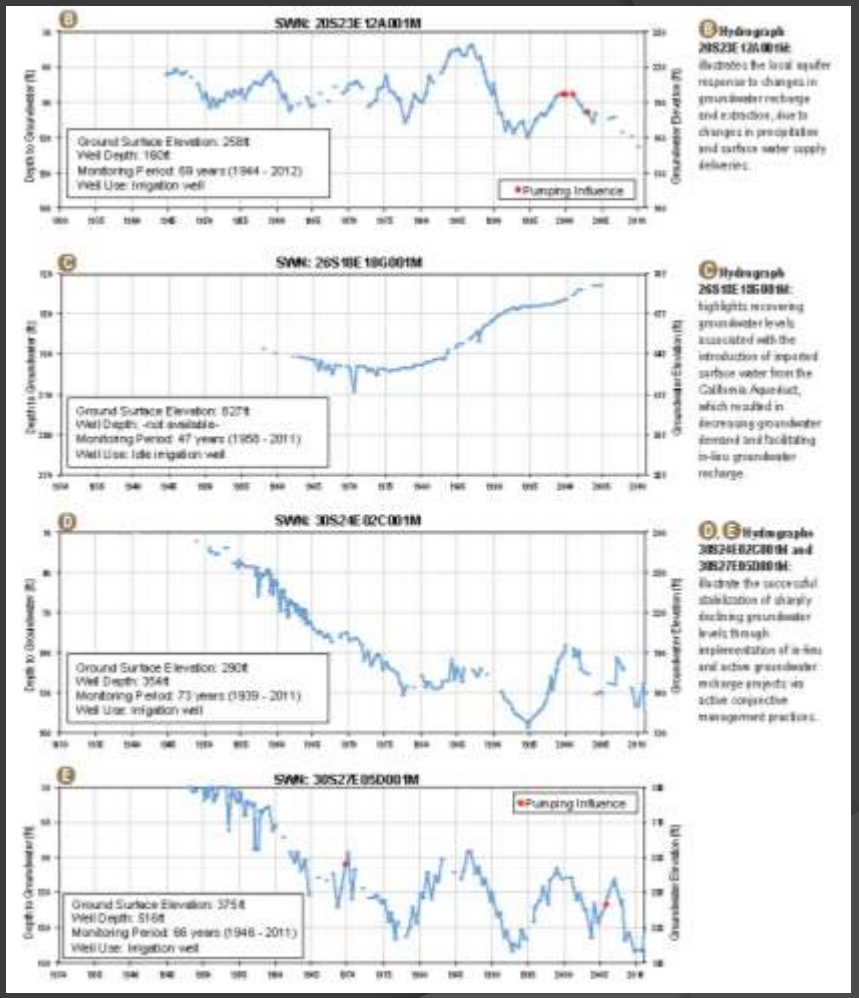
Spring 2012 to Spring 2013



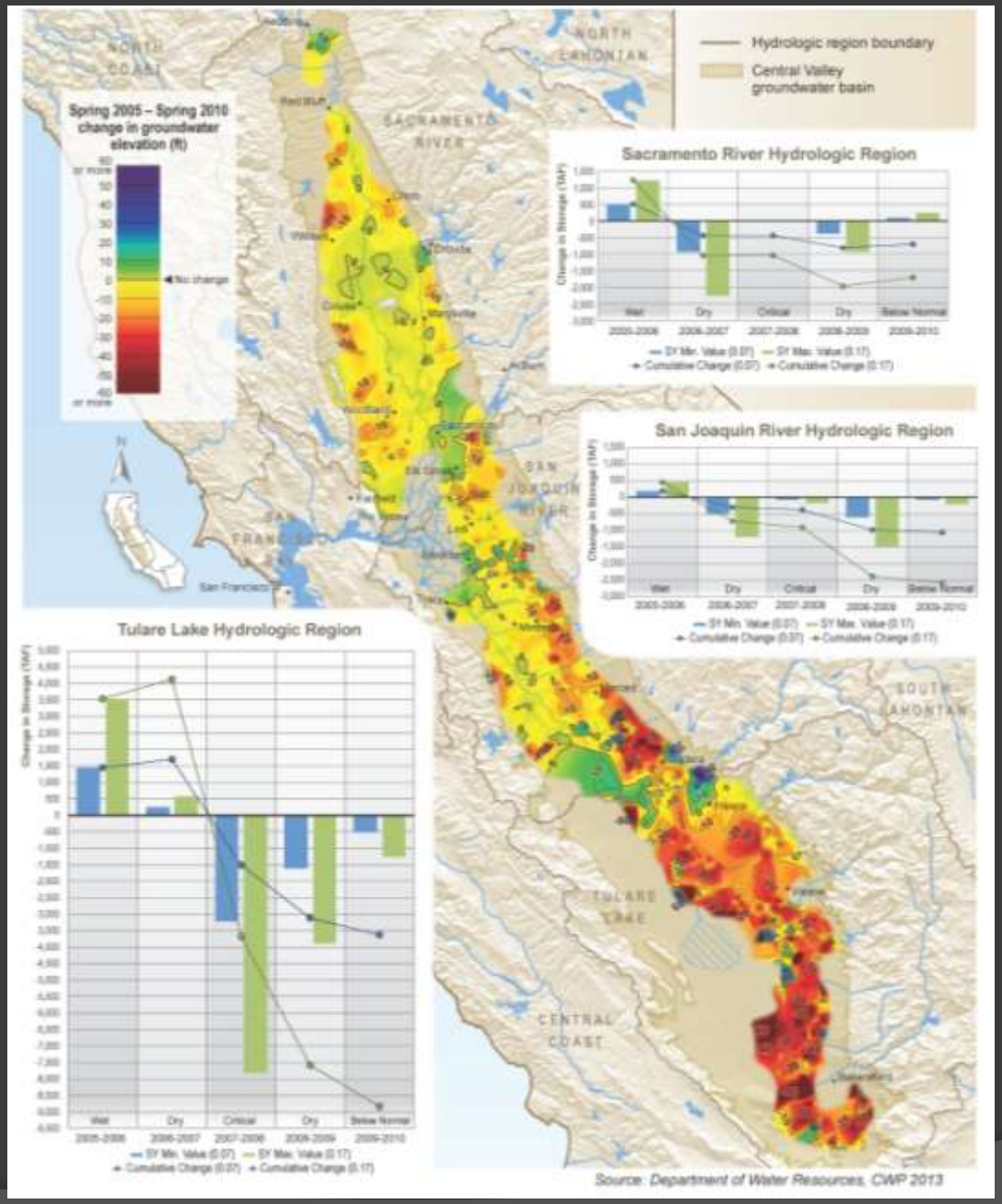
Tulare Lake Region



Regional Hydrographs



Spring 2005-Spring 2010 Change in GW Storage



Sacramento River HR

+

San Joaquin River HR

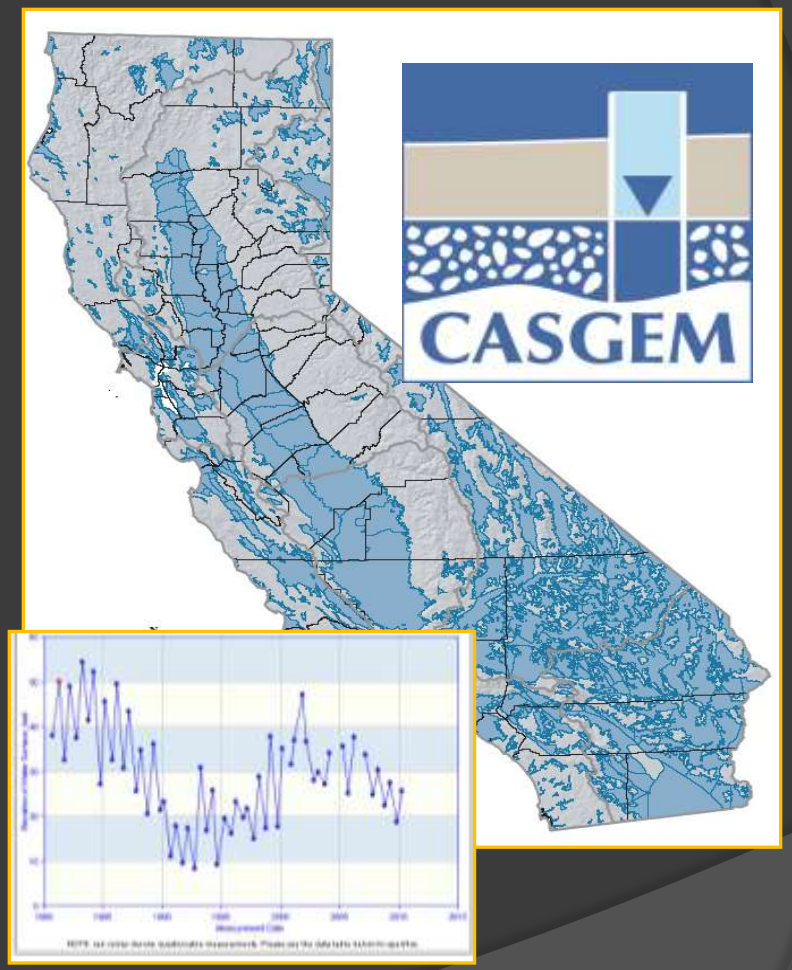
+

Tulare Lake HR

= approx. -5 to -13 Million Acre feet (MAF)

OUTLINE

- CASGEM Overview
- Basin Prioritization
- Next Steps



CASGEM
Basin Prioritization Process

Dan McManus
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CASGEM Statewide Basin Prioritization Process

CWC §10933

As part of the CASGEM Basin Prioritization Process, DWR is directed to consider, to the extent that it is available, *eight* Statewide data components:

1. **Population**
2. **Population Growth**
3. **Number of Public Supply Wells**
4. **Total Number of Wells**
5. **Irrigated Acreage**

CASGEM Basin Prioritization Process

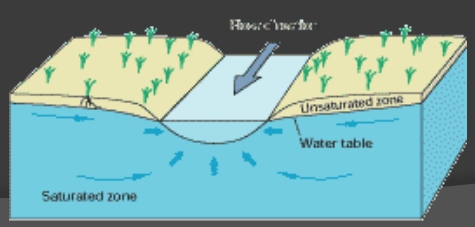
CWC §10933

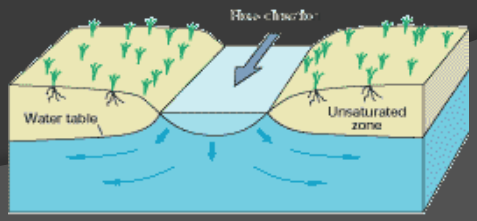
Data components…continued

6. **Groundwater Reliance:** Volume and Percent (of overall supply),

7. **Documented Impacts:**
   - overdraft,
   - subsidence,
   - saline intrusion,
   - other types of groundwater quality issues

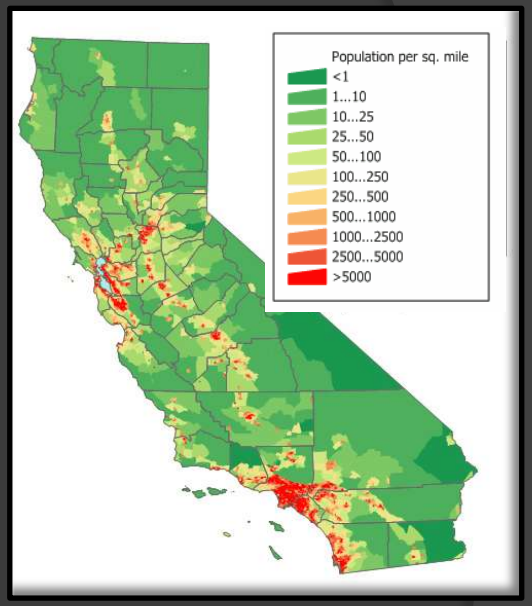
8. **"Other" Information:** Any other information determined to be relevant by the Department, i.e., sw-gw interaction.





Statewide Data Sources

1. **Population Overlying the Basin:**
   ***Source*: Dept. of Finance 2010 Census data processed by DWR demographic staff**



2. **Population Growth:**
   ***Source:* DOF 2010 Census data projected to 2030, by DWR Demographics staff using a "*current trends*" for growth.**

3. **Number of Public Supply Wells:**
   ***Source:* 2012 CA Dept. Public Health drinking water supply database**

Statewide Data Sources

4. **Total Number of Wells:**
   Source: **Estimated from DWR Well Log database.**

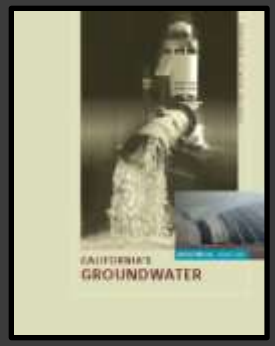
5. **Irrigated Acreage:**
   Source: **Estimated from 2005 land use data developed by DWR and by the Department of Conservation's Farmland Mapping Program.**

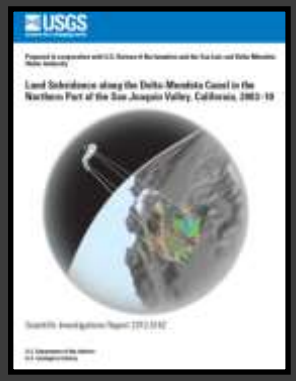
6. **Groundwater Reliance:**
   Source**: Estimated from 2005 land use data developed by DWR and the Department of Conservation.**

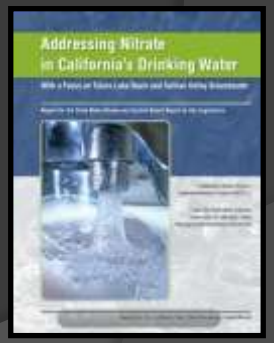
Statewide Data Sources

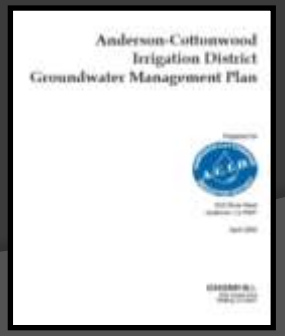
7. **Documented Impacts:**
   Source: **DWR Region office staff review of DWR Bulletin 118-2003, local groundwater management plans, or other readily available published information.**

8. **"Other" Information:**
   Source: **DWR Region office staff review of DWR Bulletin 118-2003, local groundwater management plans, or other readily available published information.**









CASGEM Basin Prioritization Process

Challenges:

- **No GW Use Reporting for most CA Basins.**
- **GW Use is estimated from Land Use which is compiled by Detailed Analysis Units (DAUs).**

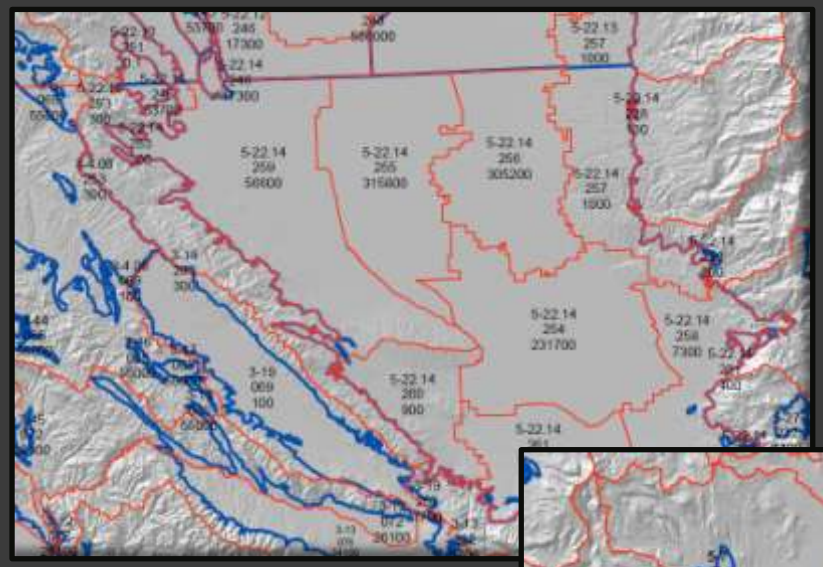
278 DAUs

515 Basins/Subbasins

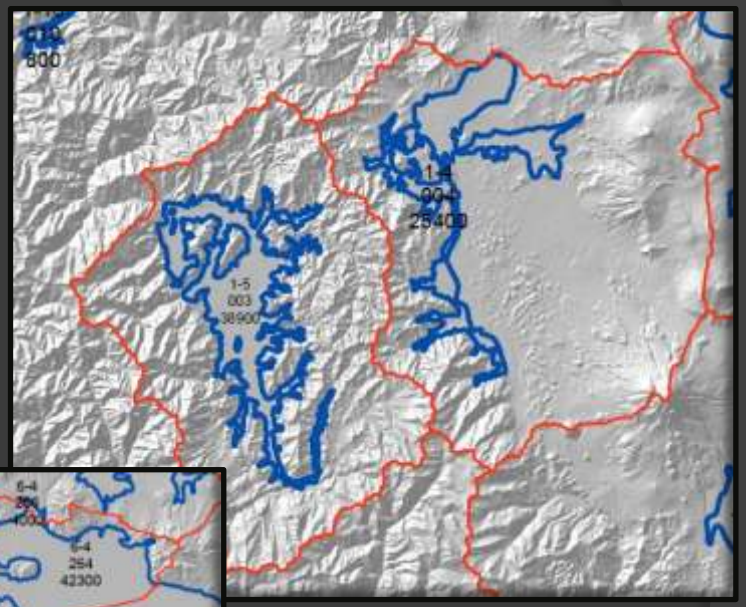
***Initial Step*: Translate gw use data from DAUs to GW Basins.**

CASGEM Basin Prioritization Process

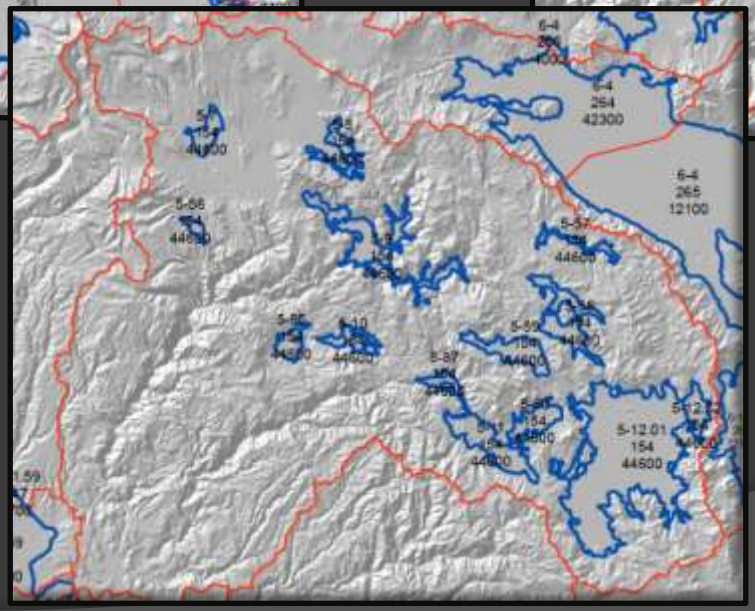
Initial Steps: Translate GW Use by DAU to GW Use by GW Basin.



Kern County



Scott-Shasta

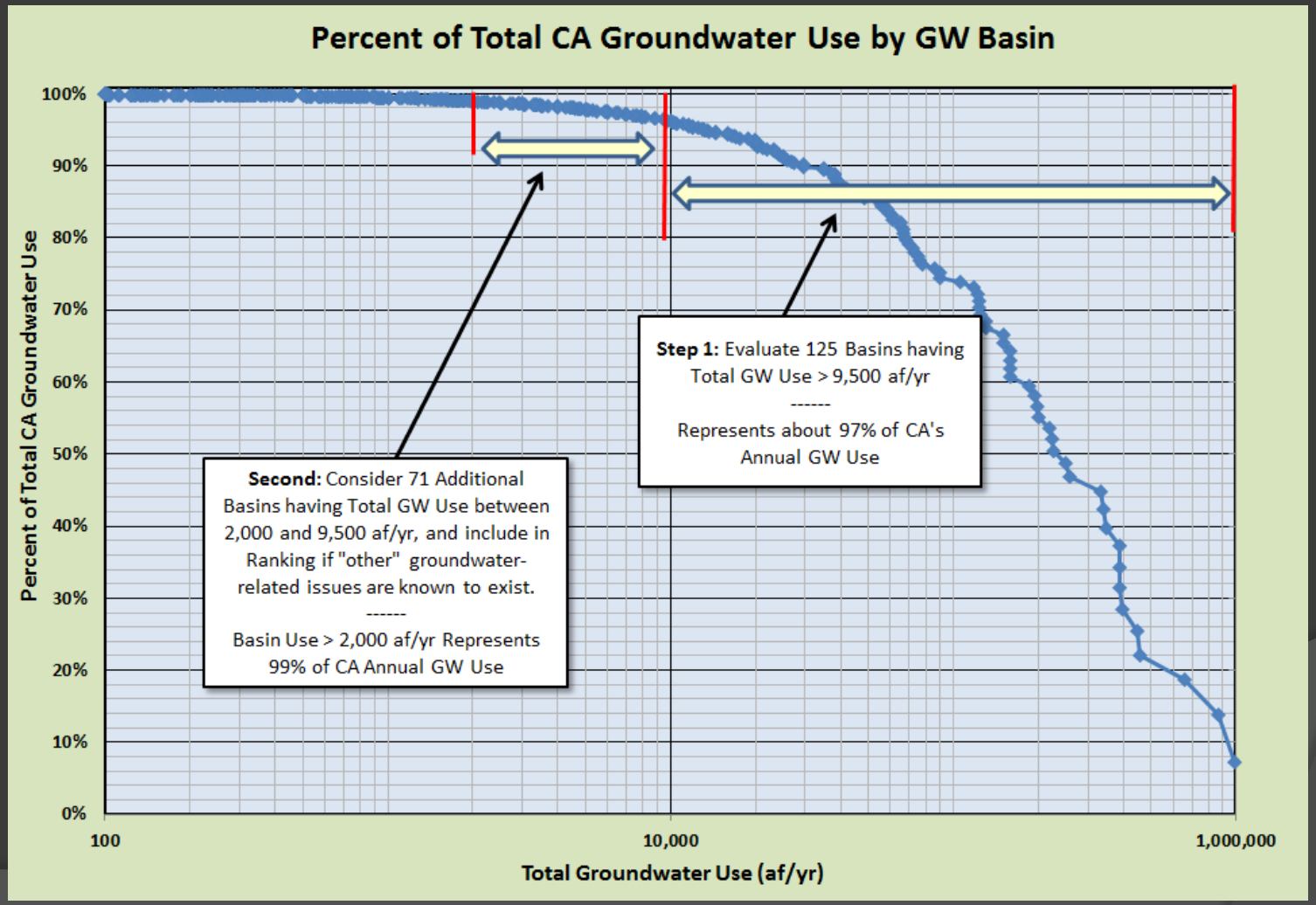


Plumas County

CASGEM Basin Prioritization Process

Initial Steps: Statewide Assessment of GW Use by GW Basin

Consider Prioritization of all basins with GW Use ≥ 2,000 ac-ft/year



CASGEM Basin Prioritization Process

Next Steps: Normalize Data by Basin Area

Groundwater Basin Size is Highly Variable

Data Component Units

GW Use = ac-ft/acre

Population = persons/sq-mi

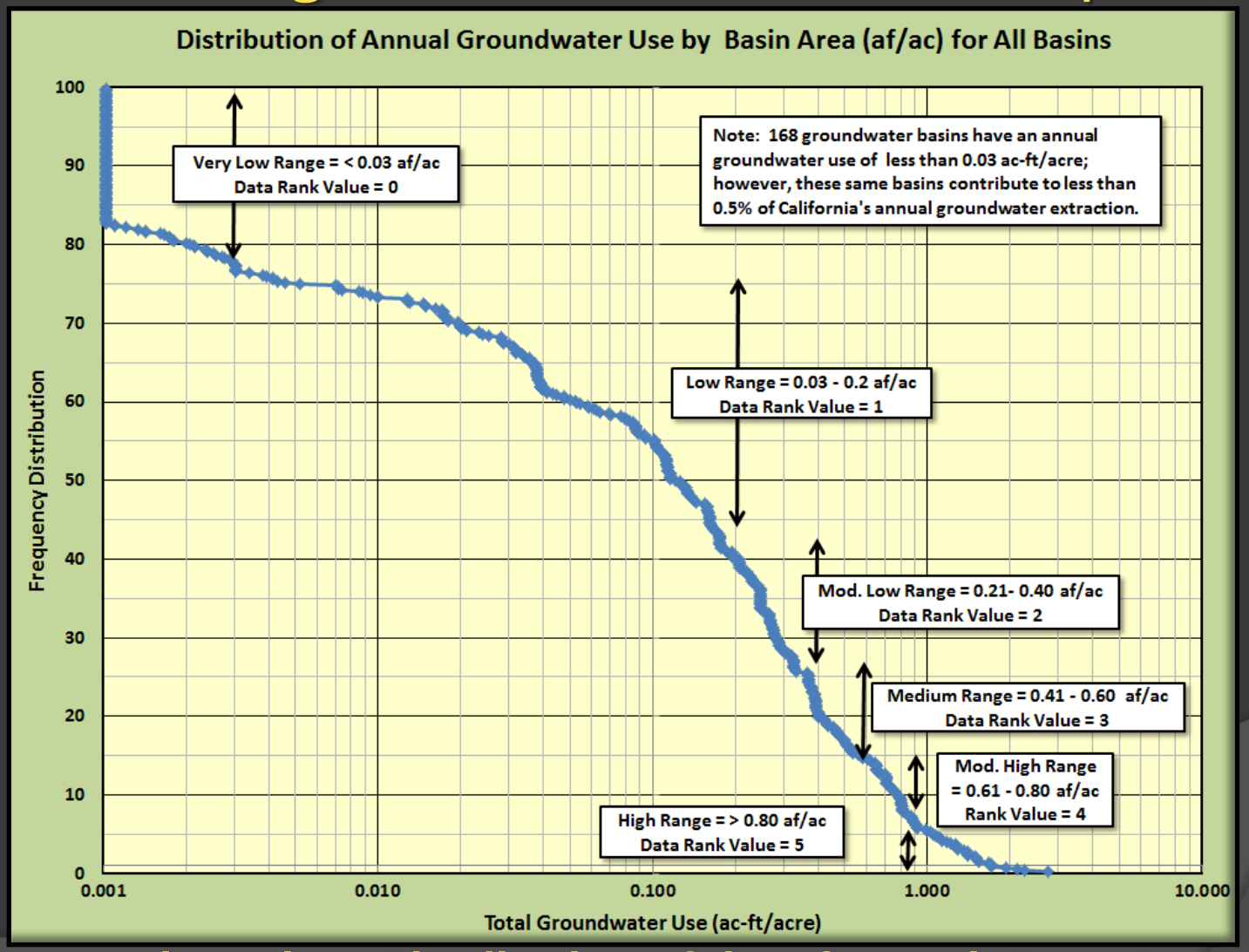
Well Counts = wells/sq-mi

Irrigated Area = acres/sq-mi

CASGEM Basin Prioritization Process

Next Steps: Develop Data Distribution Ranking Ranges and Values

Data Ranking Values = 0-5 for each Data Component



Data Ranges based on Distribution of data for each Data Component

CASGEM Basin Prioritization Process

Next Steps: Develop Data Distribution Ranking Ranges and Values for Data Components 1 - 6

Data Ranking Values = 0-5 for each Data Component

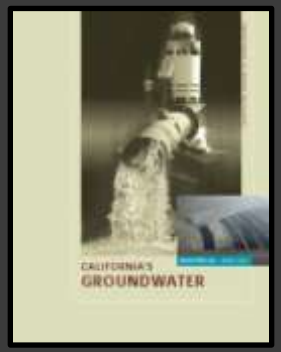
Data Component Ranking	Data Component Ranking Value	Data Components and Ranking Ranges						
		Population		PSW Density	Total Well Density	Irrigated Acreage	Groundwater Reliance	
		Density	Projected Growth				GW Use	% of Total Supply
		per sq-mi	%	per sq.-mi	per sq. mi	ac/sq-mi	ac-ft/acre	%
Very Low	0	< 7	< 0	< 0.01	< 0.01	< 0.1	< 0.3	< 0.1
Low	1	7 - 250	0 - 6.0	0.01 - 0.1	0.01 - 2.0	0.1 - 60	0.3 - 20	0.1 - 20
Moderately Low	2	251 - 1000	6.1 - 15	0.11 - 0.25	2.1 - 5.0	61 - 115	0.21 - 0.4	21 - 40
Medium	3	1001 - 2500	15.1 - 25	0.26 - 0.50	5.1 - 10.0	116 - 250	0.41 - 0.6	41 - 60
Moderately High	4	2501 - 4000	25.1 - 40	0.51 - 1.0	10.1 - 20	251 - 350	0.61 - 0.8	61 - 80
High	5	≥ 4000	≥ 40%	≥ 1.0	> 20	> 350	> 0.8	> 80%
Note: Population growth is percent growth from 2010 to 2030								

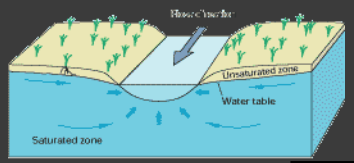
Data Ranges based on Distribution of data for each Data Component

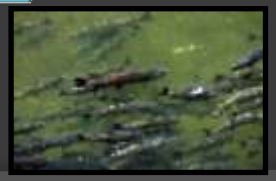
CASGEM Basin Prioritization Process

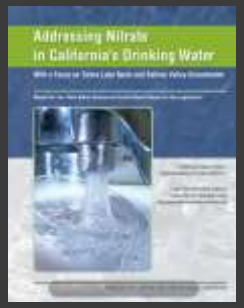
Next Steps: Assess Data Components 7 & 8
"*Documented Impacts*" and "*Other Information*"

DWR Region Office Review of *Readily* Available Information
Assigned a Value of 0-5 for "*Impacts*" and "*Other Information*"









CASGEM Basin Prioritization Process

Next Steps: Assess "Impacts" and "Other Information" Compile Data Component Scores and Ranking

Basin --- Subbasin	Data Component Ranking Value										Overall Ranking		Impact Comments	Other Information Comments
	Population	Population Growth	Public Supply Wells	Total Wells *	Irrigated Acreage *	Groundwater Reliance			Impacts	Other Information	Overall Basin Ranking Score *	Overall Basin Priority		
						GW Use	Percent of Total Supply *	GW Reliance Total						
Sacramento Valley --- South American	3	3	4	5	3	2	3	2.1	3		21.1	High	From B118: Montgomery Watson (1997) listed seven sites within the subbasin with significant groundwater contamination. From Sac County GWMP: Overall decreasing groundwater level trend over past 50 years (~30ft).	
Sacramento Valley --- Yolo	2	3	3	5	5	5	3	3.6	1		20.1	High	Localized TDS problems preclude using gw for some M&I uses without treatment. Some subsidence in northeast of Davis and in northern Yolo.	

NOTE: * Data component values were reduced by 25% due to data confidence, prior to calculating total GW basin ranking value.
Overall Basin Ranking = Population + Population Growth + PSW + (Total Wells x .75) + (Irr Acreage x 0.75) + {(GW Use + (GW % x .75))/2} + Impacts + Other

CASGEM Basin Prioritization Process

Next Steps: Compile Data Component Scores and Rank Basins

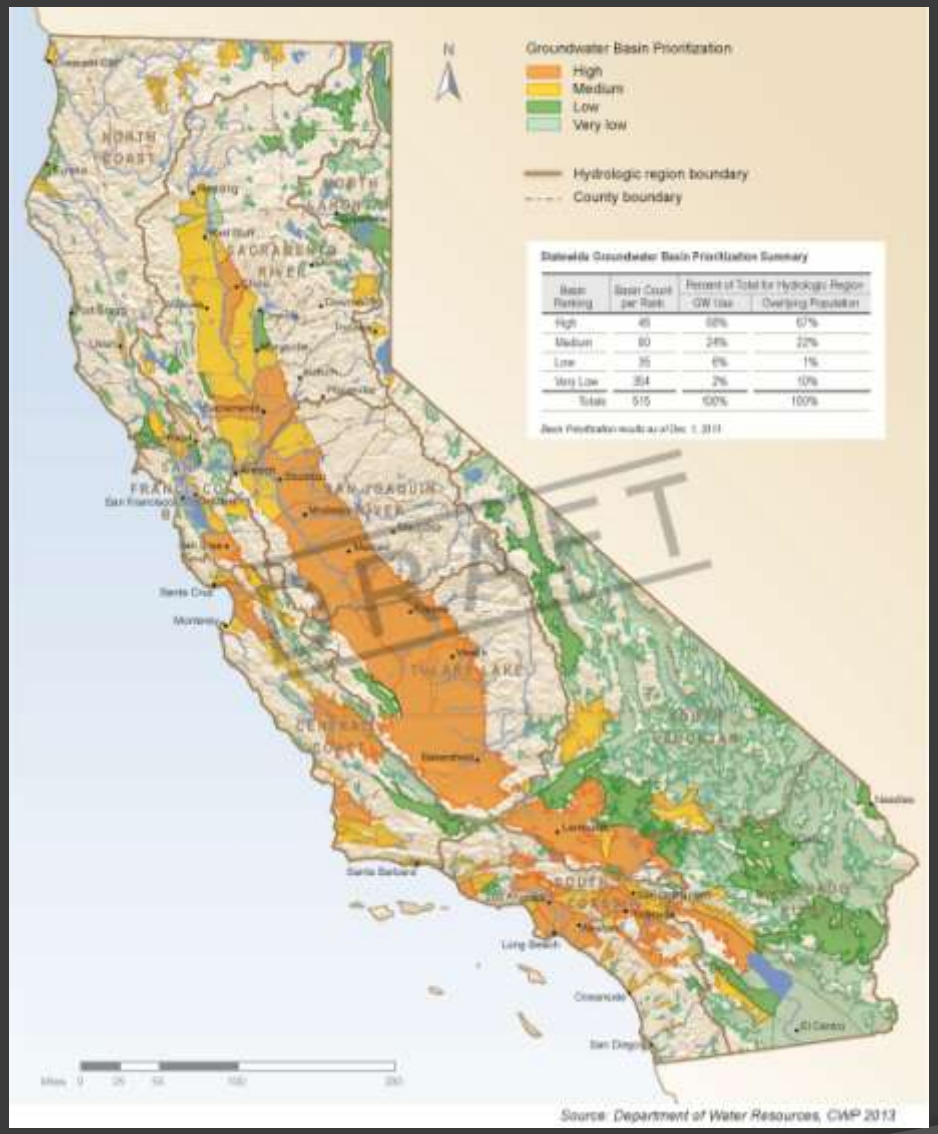
Statewide Breakdown by Hydrologic Region

Hydrologic Region	CASGEM Groundwater Basin Priority by Ranking Range and Hydrologic Region				HR Basin Count	Percent of Total Groundwater Use and Overlying Population for High & Medium Ranked Basins	
	High priority	Medium priority	Low priority	Very Low priority		Overlying Groundwater Use *	Overlying Population *
	Ranking Range > 19.7	Ranking Range 12.6 - 19.6	Ranking Range 5.5 - 12.5	Ranking Range < 5.4			
North Coast	0	8	2	53	63	84%	74%
San Francisco	1	6	1	25	33	88%	63%
Central Coast	8	16	1	35	60	91%	96%
South Coast	14	22	5	32	73	96%	94%
Sacramento River	5	16	7	60	88	89%	97%
San Joaquin River	7	2	0	2	11	99%	99%
Tulare Lake	7	1	1	10	19	98%	98%
North Lahontan	0	2	2	23	27	9%	55%
South Lahontan	2	3	7	65	77	55%	94%
Colorado River	2	4	9	49	64	77%	65%
Statewide	**46**	**80**	**35**	**354**	**515**	**92%**	**89%**

Note: * Estimated percentages are based on total groundwater use and population overlying all alluvial groundwater basins in the hydrologic region.

CASGEM Basin Prioritization Process

Next Steps: Compile Data Component Scores and Rank Basins



Statewide Breakdown

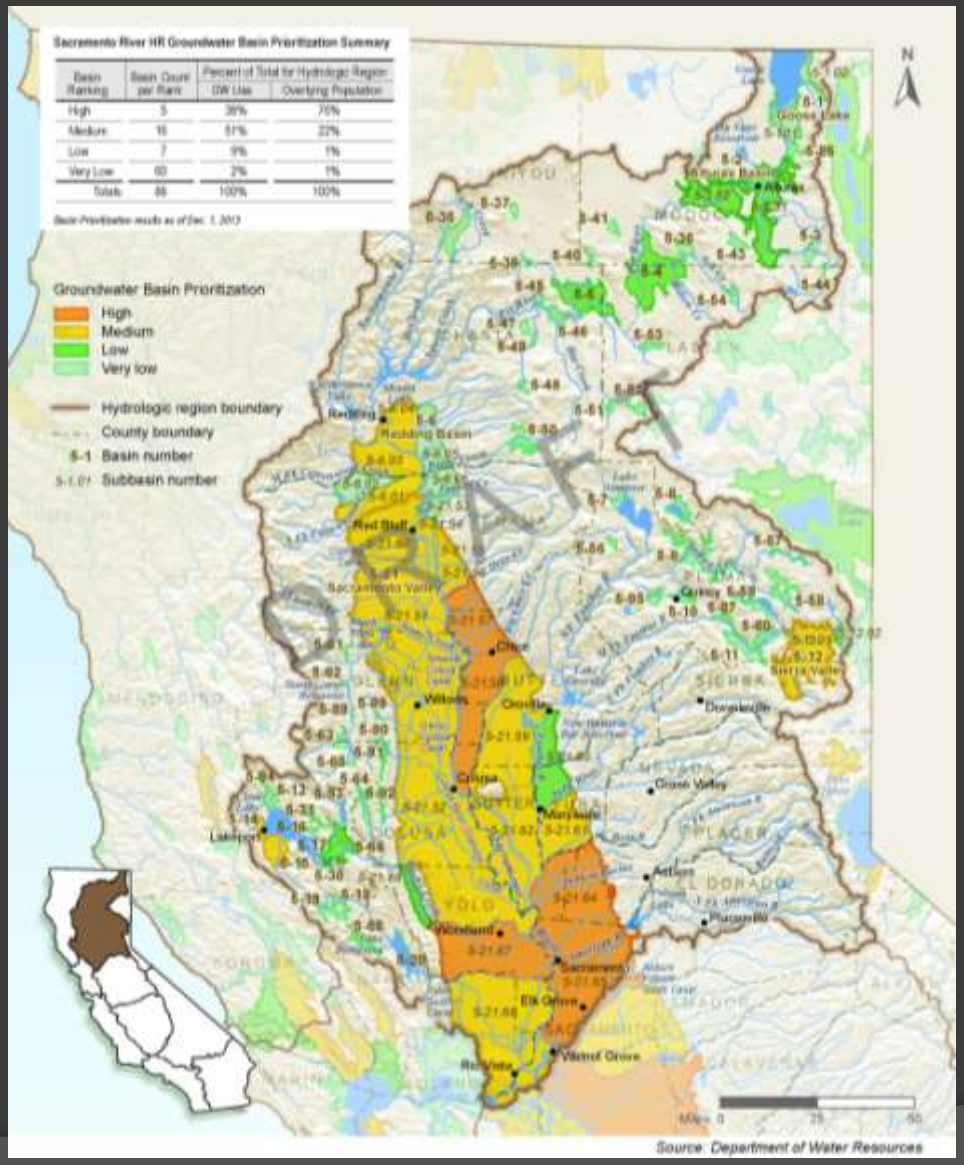
Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying Groundwater Basin Areas	
		Overlying GW Use	Overlying Population
High	46	68%	67%
Medium	80	24%	22%
Low	35	6%	1%
Very Low	354	2%	10%
Totals	515	100%	100%

126 High & Medium Priority basins cover …

- 92% of California's annual groundwater pumping
- 89% of California's population (overlying the gw basins area)

CASGEM Basin Prioritization Process

Next Steps: Compile Data Component Scores and Rank Basins



Sacramento River HR Breakdown

Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying Groundwater Basin Areas	
		Overlying GW Use	Overlying Population
High	5	38%	76%
Medium	16	51%	22%
Low	7	9%	1%
Very Low	60	2%	1%
Totals	88	100%	100%

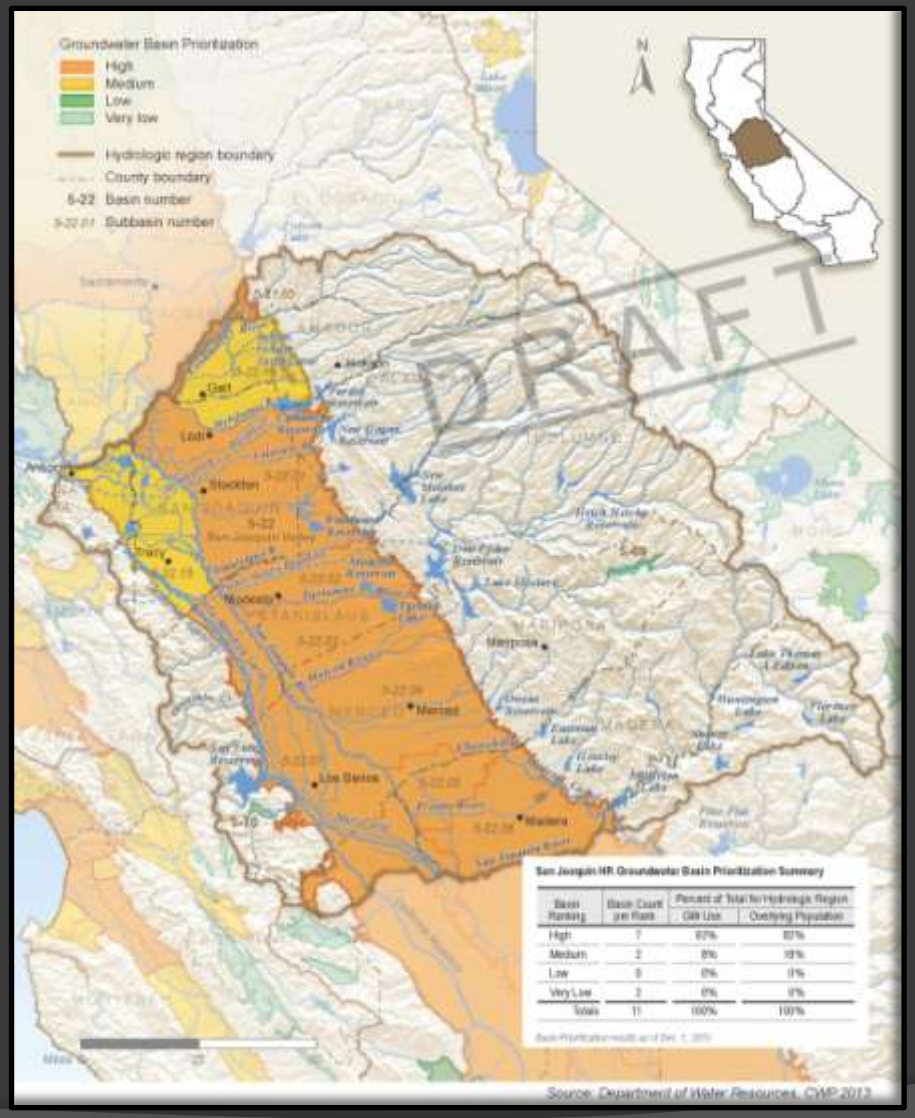
21 High & Medium Priority basins cover …

- 89% of Sacramento River HR's annual groundwater pumping
- 98% of Sacramento River HR's population

Note: GW Use and Population Percentages are for overlying GW basin areas

CASGEM Basin Prioritization Process

Next Steps: Compile Data Component Scores and Rank Basins



San Joaquin River HR Breakdown

Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying	
		Overlying GW Use	Overlying Population
High	7	92%	82%
Medium	2	8%	18%
Low	0	0%	0%
Very Low	2	0%	0%
Totals	11	100%	100%

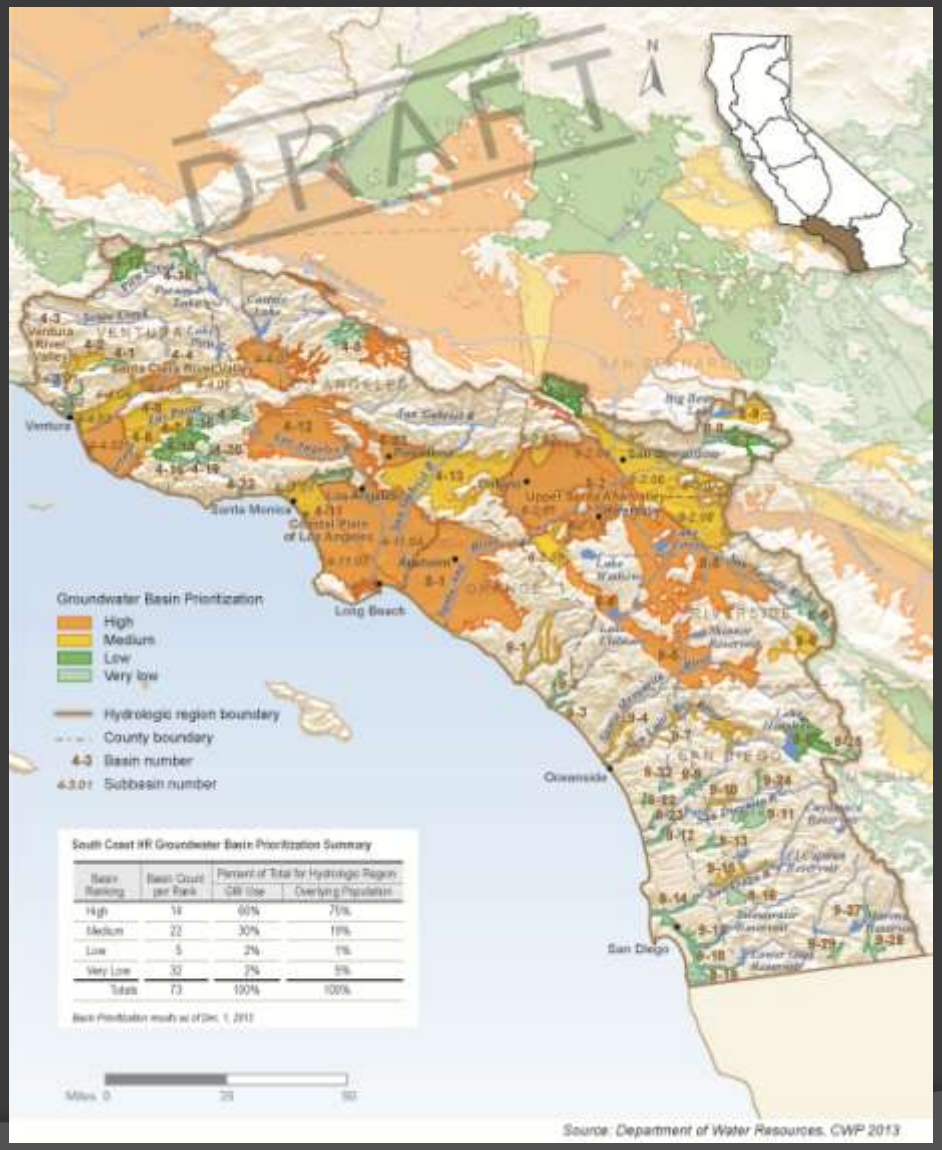
9 High & Medium Priority basins cover …

- 99% of HR's annual groundwater pumping
- 99% of HR's population

Note: GW Use and Population Percentages are for overlying GW basin areas

CASGEM Basin Prioritization Process

Next Steps: Compile Data Component Scores and Rank Basins



South Coast HR Breakdown

Basin Ranking	Basin Count per Rank	Percent of Total GW Use and Population Overlying	
		Overlying GW Use	Overlying Population
High	14	66%	75%
Medium	22	30%	19%
Low	5	2%	1%
Very Low	32	2%	5%
Totals	73	100%	100%

36 High & Medium Priority basins cover …

- 96% of HR's annual groundwater pumping
- 94% of HR's population

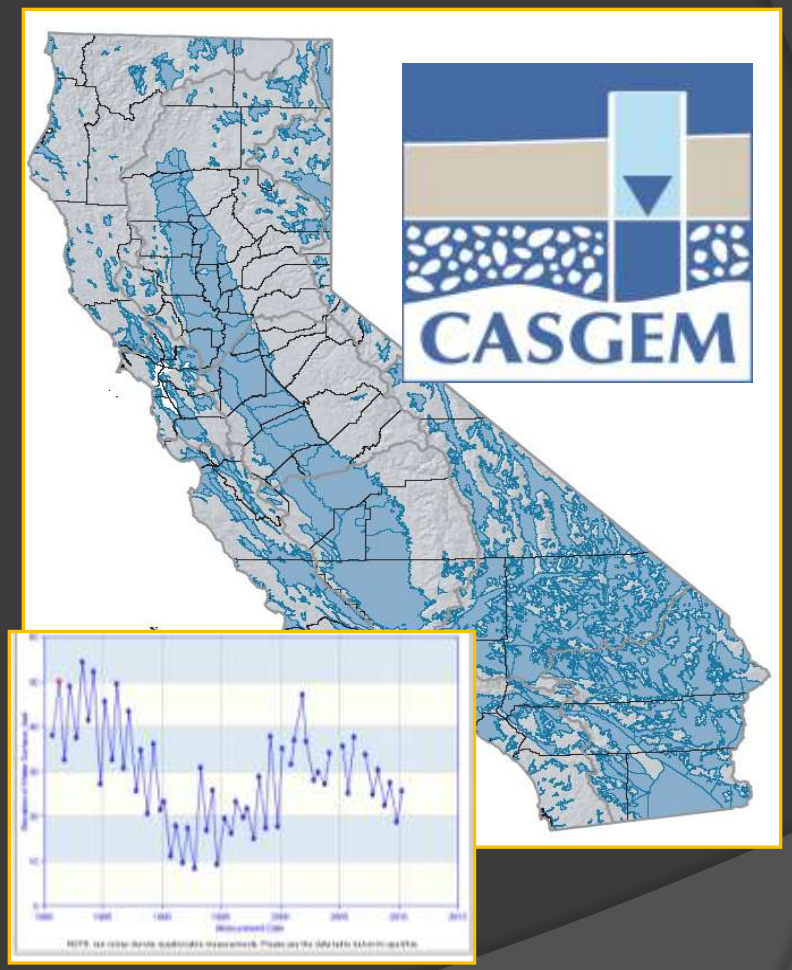
Note: GW Use and Population Percentages are for overlying GW basin areas

CASGEM Basin Prioritization Process

Where do we go from here?

OUTLINE

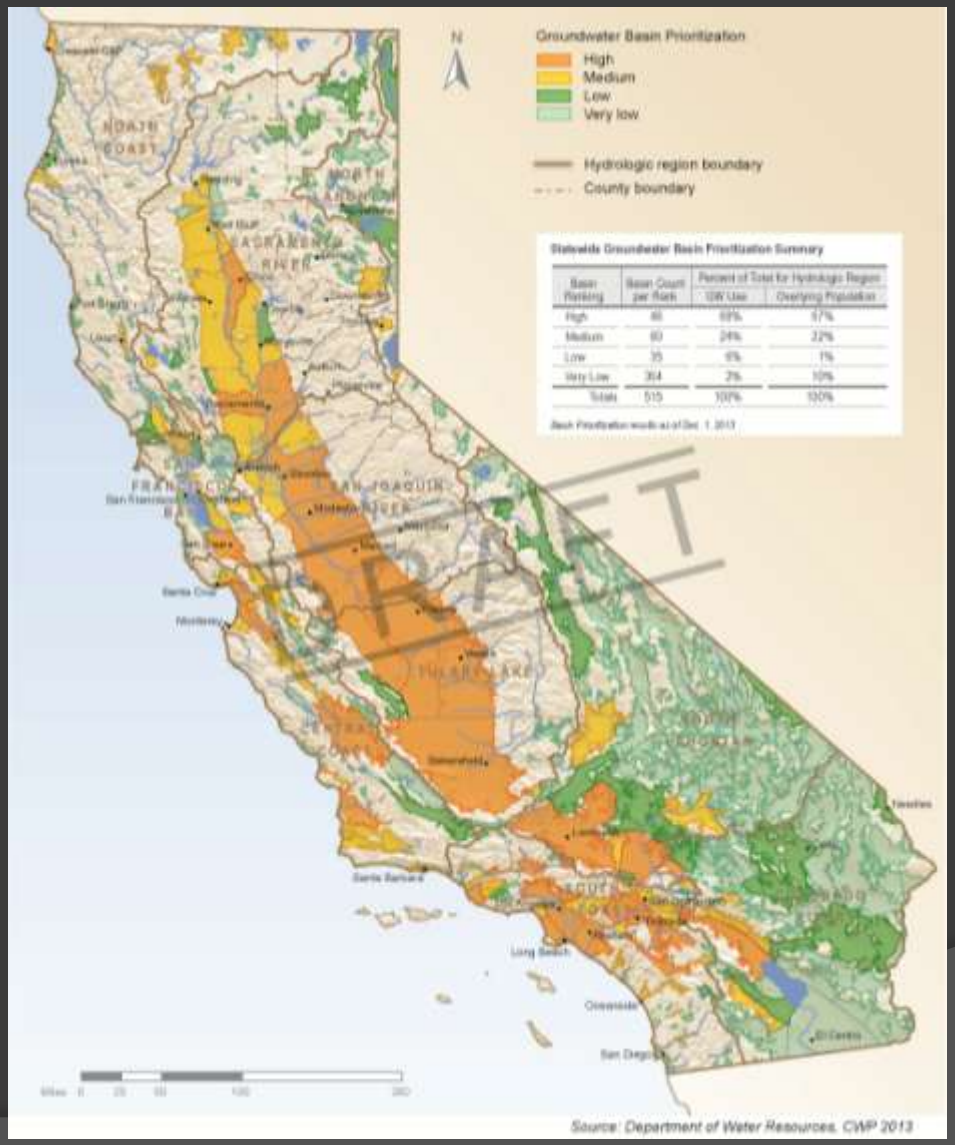
- CASGEM Overview
- Basin Prioritization
- Next Steps



Basin Prioritization Results

- Prioritization does not reflect basin management or monitoring
- Preliminary Statewide Results
  - 46 High Priority Basins
  - 80 Medium Priority Basins
  - 35 Low Priority Basins
  - 354 Very Low Priority Basins
- 75% are Low and Very Low Priority Basins
- 25% are High and Medium Priority Basins
  - 92% of groundwater use, 89% of population overlying the groundwater basin
  - 75% are Low and Very Low Priority Basins

Draft Statewide Results



How will the CASGEM Program use the Basin Prioritization?

- DWR will utilize the prioritized results and assess groundwater basins on a statewide scale.
- DWR will focus efforts on evaluating the status of groundwater level monitoring in High and Medium Priority groundwater basins where monitoring will have the greatest benefit.

How else could Basin Prioritization be used?

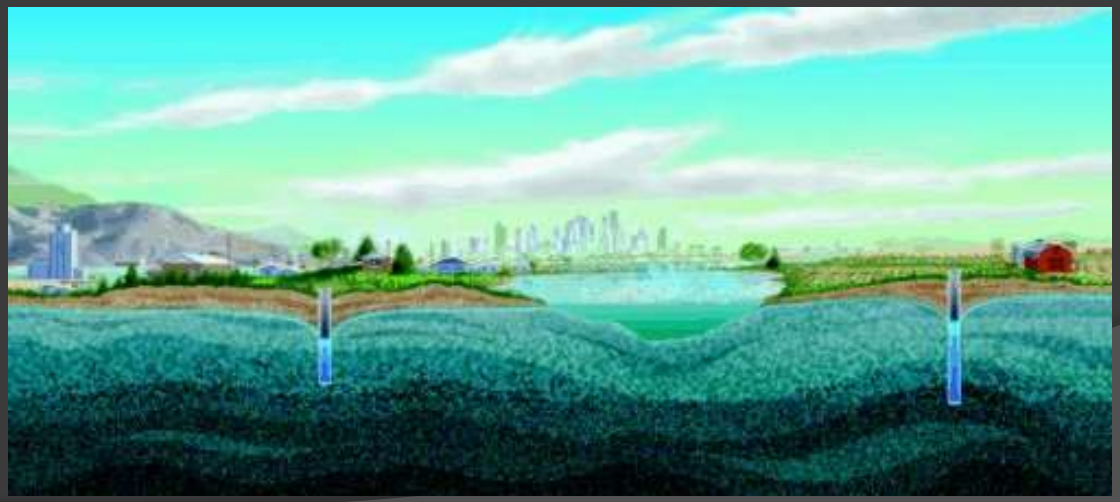
- Promote informed decision making
- Provide a common understanding of the statewide significance of the 515 groundwater basins and subbasins
- Prioritize allocation of limited resources
- Identify and prioritize basins needing to improve groundwater management practices

Next Steps for FY 13/14

- Identify High and Medium Priority Basins that are not monitored and/or not designated with a Monitoring Entity.
  - Preliminary results:
    - 58% (73) of High and Medium Priority basins are monitored under CASGEM
    - 8% (10) of High and Medium Priority Basins are partially monitored under CASGEM
    - 34% (43) of High and Medium Priority Basins are not monitored under CASGEM

Next Steps for FY 13/14

- Solicit and respond to comments on Prioritization Process and Basin Summary Data
- Finalize Prioritized Basin list - March 2014



How will the CASGEM Program use the Basin Prioritization?

- A list of the High and Medium Priority basins without a CASGEM Monitoring Entity will be provided to the grants and loans programs at DWR, SWRCB, and DPH.

- Specific grant programs will determine eligibility for their respective grants with respect to the basin not being monitored under the CASGEM Program, as specified in the Water Code.

Input Needed

Q. What can you do to help the process ?

1. Review the basin prioritization process
2. Review where your basin falls within the Data Component range for…
    - Irrigated Acres
    - Groundwater Use
    - % of Groundwater of Total Supply
3. Review information for *Documented Impacts* and "*Other*" to see if DWR has captured the major groundwater related issues

CASGEM Program Basin Prioritization Information

Q. What's the best method for reviewing the data ?

1. Read the Online Basin Prioritization Materials:
   - Brochures…summarizes process and results
   - Maps…draft prioritization by Hydrologic Region
   - Report…describes methods and results

2. Review Data Summary Sheet for the basin(s) in your area.

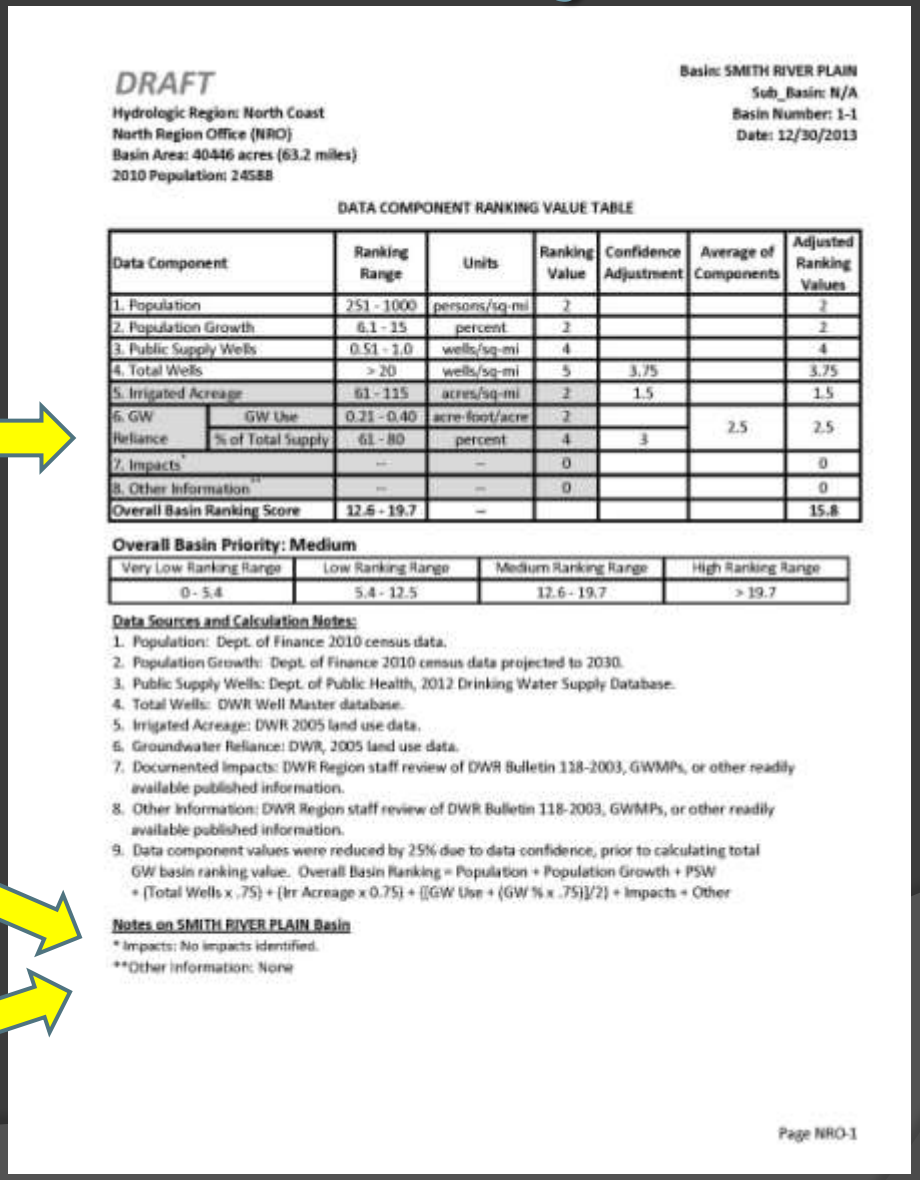
Basin Prioritization Materials are available online at
www.water.ca.gov/groundwater/casgem

Or contact the nearest DWR Region Office

Draft Basin Summary Sheets

Review

- Shaded areas
- Impacts
- Other Information



DRAFT

Hydrologic Region: North Coast
North Region Office (NRO)
Basin Area: 40446 acres (63.2 miles)
2010 Population: 24588

Basin: SMITH RIVER PLAIN
Sub_Basin: N/A
Basin Number: 1-1
Date: 12/30/2013

DATA COMPONENT RANKING VALUE TABLE

Data Component		Ranking Range	Units	Ranking Value	Confidence Adjustment	Average of Components	Adjusted Ranking Values
1. Population		251 - 1000	persons/sq-mi	2			2
2. Population Growth		6.1 - 15	percent	2			2
3. Public Supply Wells		0.51 - 1.0	wells/sq-mi	4			4
4. Total Wells		> 20	wells/sq-mi	5	3.75		3.75
5. Irrigated Acreage		61 - 115	acres/sq-mi	2	1.5		1.5
6. GW Reliance	GW Use	0.21 - 0.40	acre-foot/acre	2		2.5	2.5
	% of Total Supply	61 - 80	percent	4	3		
7. Impacts*		--	--	0			0
8. Other Information**		--	--	0			0
Overall Basin Ranking Score		**12.6 - 19.7**	--				**15.8**

Overall Basin Priority: Medium

Very Low Ranking Range	Low Ranking Range	Medium Ranking Range	High Ranking Range
0 - 5.4	5.4 - 12.5	12.6 - 19.7	> 19.7

Data Sources and Calculation Notes:

1. Population: Dept. of Finance 2010 census data.
2. Population Growth: Dept. of Finance 2010 census data projected to 2030.
3. Public Supply Wells: Dept. of Public Health, 2012 Drinking Water Supply Database.
4. Total Wells: DWR Well Master database.
5. Irrigated Acreage: DWR 2005 land use data.
6. Groundwater Reliance: DWR, 2005 land use data.
7. Documented Impacts: DWR Region staff review of DWR Bulletin 118-2003, GWMPs, or other readily available published information.
8. Other Information: DWR Region staff review of DWR Bulletin 118-2003, GWMPs, or other readily available published information.
9. Data component values were reduced by 25% due to data confidence, prior to calculating total GW basin ranking value. Overall Basin Ranking = Population + Population Growth + PSW + (Total Wells x .75) + (Irr Acreage x 0.75) + [(GW Use + (GW % x .75)]/2) + Impacts + Other

Notes on SMITH RIVER PLAIN Basin

*Impacts: No impacts identified.
**Other Information: None

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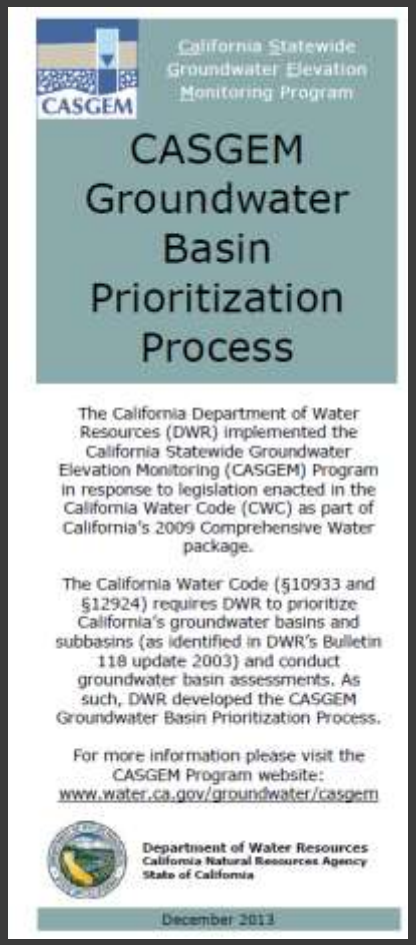
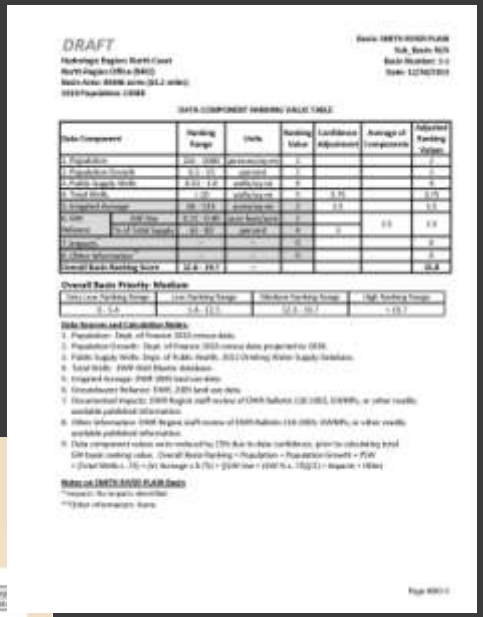
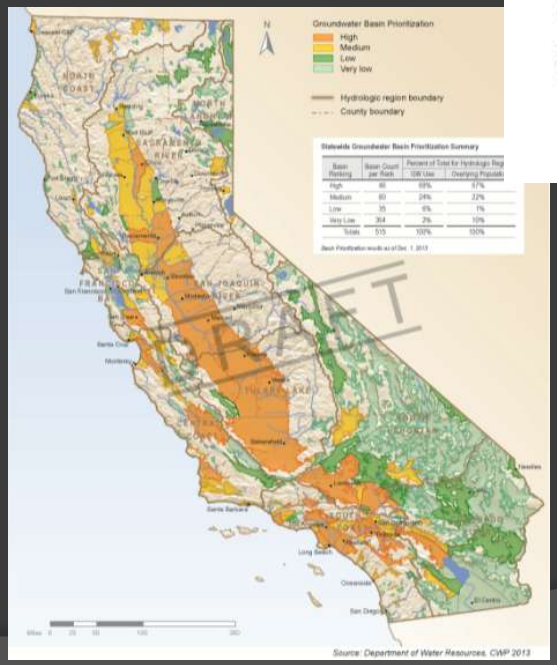
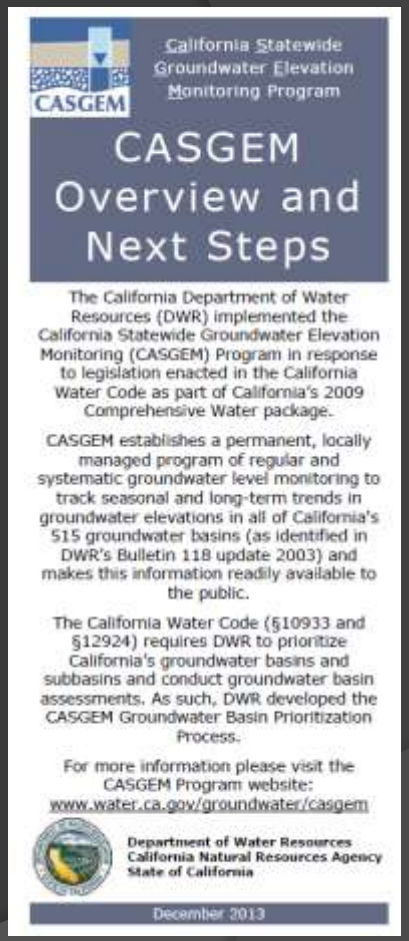
Basin Prioritization Information









Workshop Next Steps

- Public comments due February 24, 2014
  - Review basin prioritization process
  - Review basin summary sheets with basin ranking
  - Provide new or pertinent information if available for groundwater use, irrigated acreage, % of total supply, impacts, other information
- Submit written comments to DWR Brett.Wyckoff@water.ca.gov

Future Plans (Contingent on Funding)

- Continue designation of Monitoring Entities
- Evaluate extent of groundwater monitoring
- Using prioritization results, collaborate with local agencies to conduct groundwater basin assessments
- Identify regional trends
- Identify basins subject to overdraft

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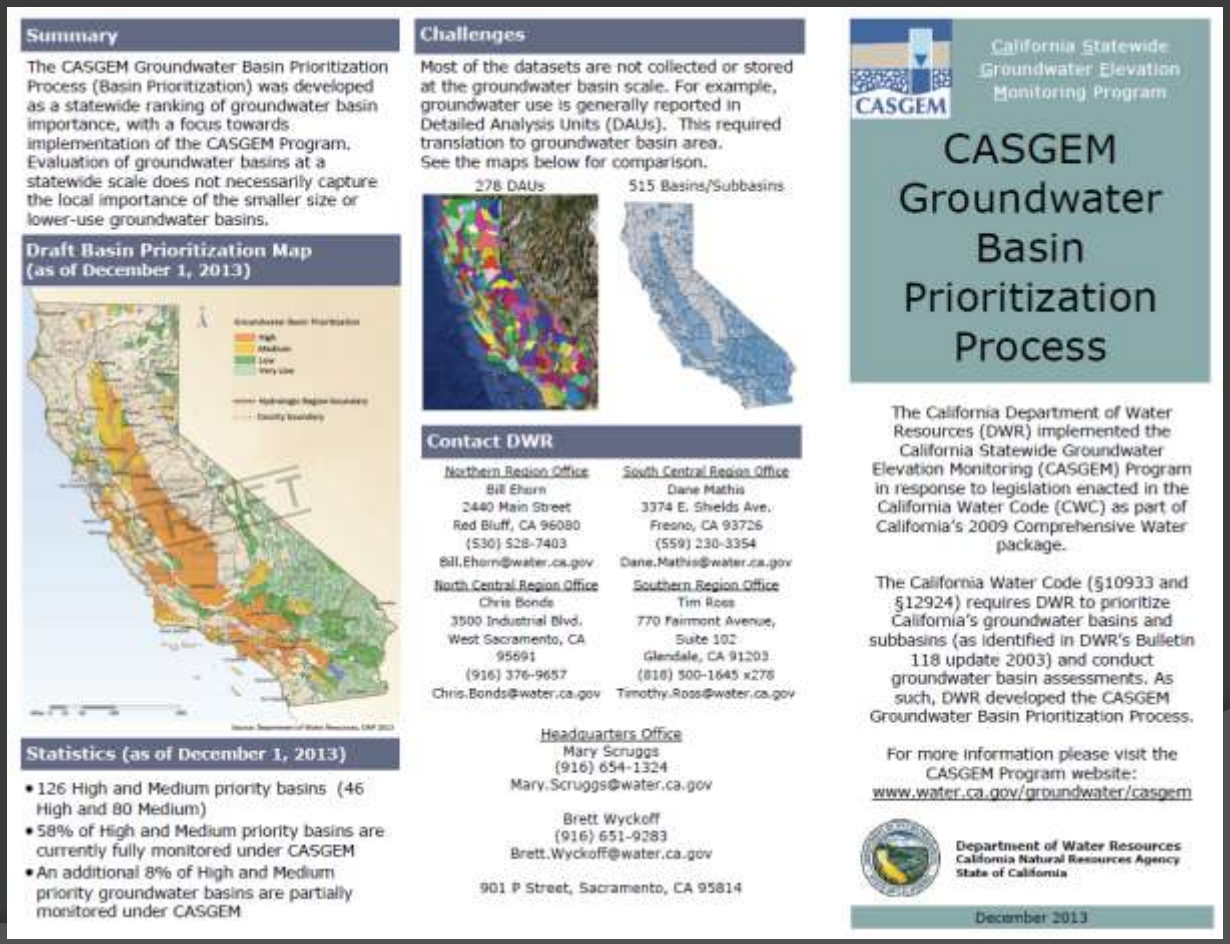
QUESTIONS?

www.water.ca.gov/groundwater/casgem



Summary

The CASGEM Groundwater Basin Prioritization Process (Basin Prioritization) was developed as a statewide ranking of groundwater basin importance, with a focus towards implementation of the CASGEM Program. Evaluation of groundwater basins at a statewide scale does not necessarily capture the local importance of the smaller size or lower-use groundwater basins.

Draft Basin Prioritization Map (as of December 1, 2013)

Statistics (as of December 1, 2013)

- 126 High and Medium priority basins (46 High and 80 Medium)
- 58% of High and Medium priority basins are currently fully monitored under CASGEM
- An additional 8% of High and Medium priority groundwater basins are partially monitored under CASGEM

Challenges

Most of the datasets are not collected or stored at the groundwater basin scale. For example, groundwater use is generally reported in Detailed Analysis Units (DAUs). This required translation to groundwater basin area. See the maps below for comparison.

278 DAUs

515 Basins/Subbasins

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California Statewide Groundwater Elevation Monitoring Program

CASGEM Groundwater Basin Prioritization Process

The California Department of Water Resources (DWR) implemented the California Statewide Groundwater Elevation Monitoring (CASGEM) Program in response to legislation enacted in the California Water Code (CWC) as part of California's 2009 Comprehensive Water package.

The California Water Code (§10933 and §12924) requires DWR to prioritize California's groundwater basins and subbasins (as identified in DWR's Bulletin 118 update 2003) and conduct groundwater basin assessments. As such, DWR developed the CASGEM Groundwater Basin Prioritization Process.

For more information please visit the CASGEM Program website:
www.water.ca.gov/groundwater/casgem

Department of Water Resources
California Natural Resources Agency
State of California

December 2013

Thank you!

Department of Water Resources

Association of California Water Agencies
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